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Reaches Largest Number of Plants

Vol. XIX | DECEMBER 18, 1929 | No. 6

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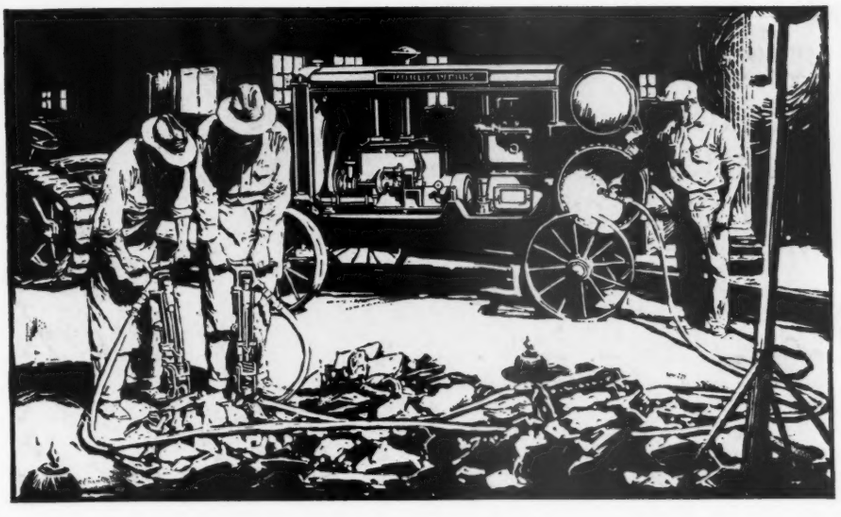

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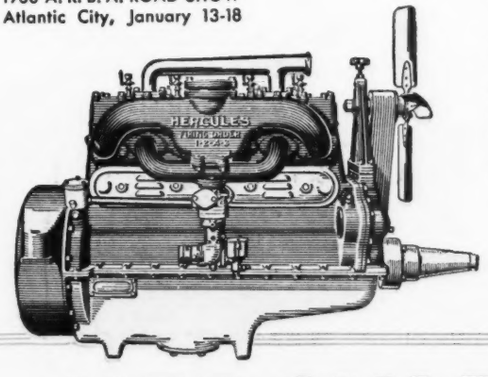

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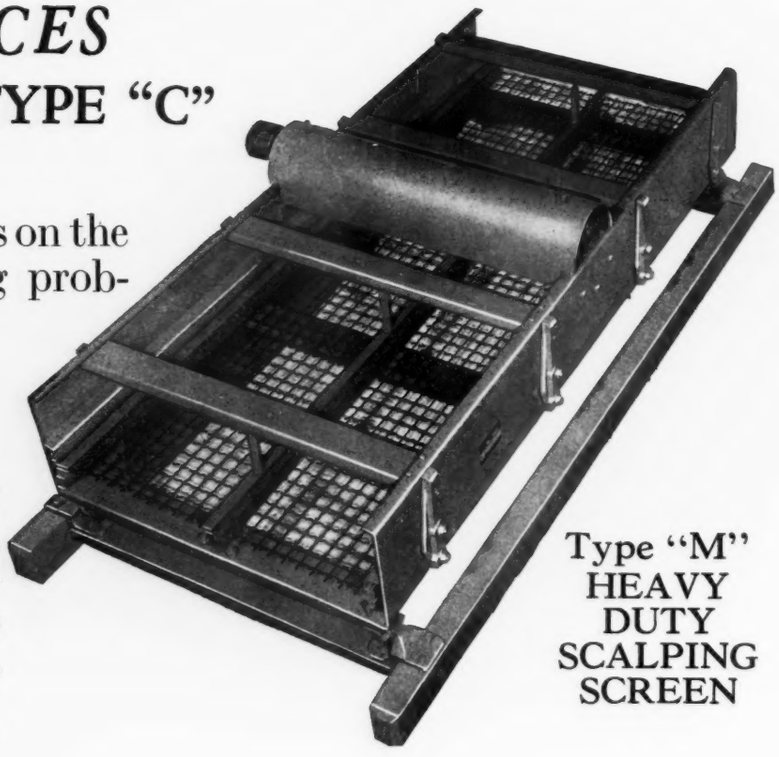

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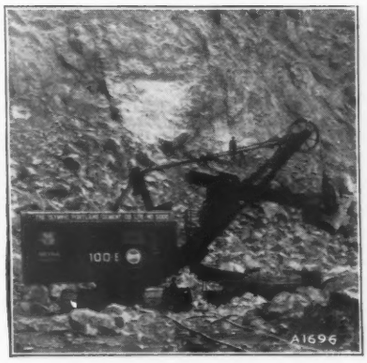

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Published Biweekly on Wednesday for Producers and Manufacturers of Sand, Gravel, Stone, Cement, Gypsum, Lime, and Other Non-Metallic Minerals.

Subscription price: $5 for 3 years, $2 for 1 year in the United States and possessions, North, Central and South America; elsewhere $1 additional for each year. Single copies 20c.

Entered as second-class matter October 9, 1928, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Published and copyrighted, 1929, by the

COMPLETE SERVICE PUBLISHING COMPANY
538 South Clark Street, Chicago, Illinois

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Pit and Quarry
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Merry Christmas!

By James Edward Hungerford

MERRY CHRISTMAS! How it THRILLS us—
Just the magic of the phrase!
And with happy feelings fills us,
As we face the HOLIDAYS!
It just sets our hearts a-singing,
And it's hard to wait, it seems,
As we picture JOYS it's bringing,
That we've visioned in our dreams!

MERRY CHRISTMAS! Millions hear it,
And the story of its birth;
Filling souls with loving spirit;
Thrilling hearts throughout the earth!
Giving JOY to countless legions,
As it wings the Hemisphere;
Spreading to the utmost regions
Of the world, its warming CHEER!

MERRY CHRISTMAS! May the greeting
Ev'rywhere its love impart,
And the magic phrase, swift-fleeting
On its way, reach ev'ry HEART!
May the day be bright and merry,
Bringing JOY to souls of men;
May God bless you with a very
MERRY CHRISTMAS, once again!

ALL RIGHTS RESERVED

Developments During 1929 in the Gypsum Industry

Automatic Hoisting Is Feature of Victor Plaster Plant

EARLY this year Victor Plaster, Incorporated, started production in its modern plant at Victor, N. Y. The raw material is obtained underground, it being hoisted from a depth of 110 ft. in 2-ton cars, on self-dumping cages, by a C. O. Bartlett and Snow hoisting engine having a 48-in. diam. drum, using 1-in. Monitor plow-steel rope. This hoist is operated through a semi-automatic Cutler-Hammer control.

The hoisted rock is dumped into a weigh-hopper, and is discharged thence to a 36-in. apron conveyor which delivers it to a 24-in. by 40-in. Pennsylvania armor-frame single-roll crushed, from which the stone issues at 1½-in. size. A bucket elevator feeds the crushed stone to a 48-in. revolving screen erected above a silo that is 30 ft. high and 22 ft. in diameter. The oversize from the screen is returned to the crusher by a belt conveyor and chutes.

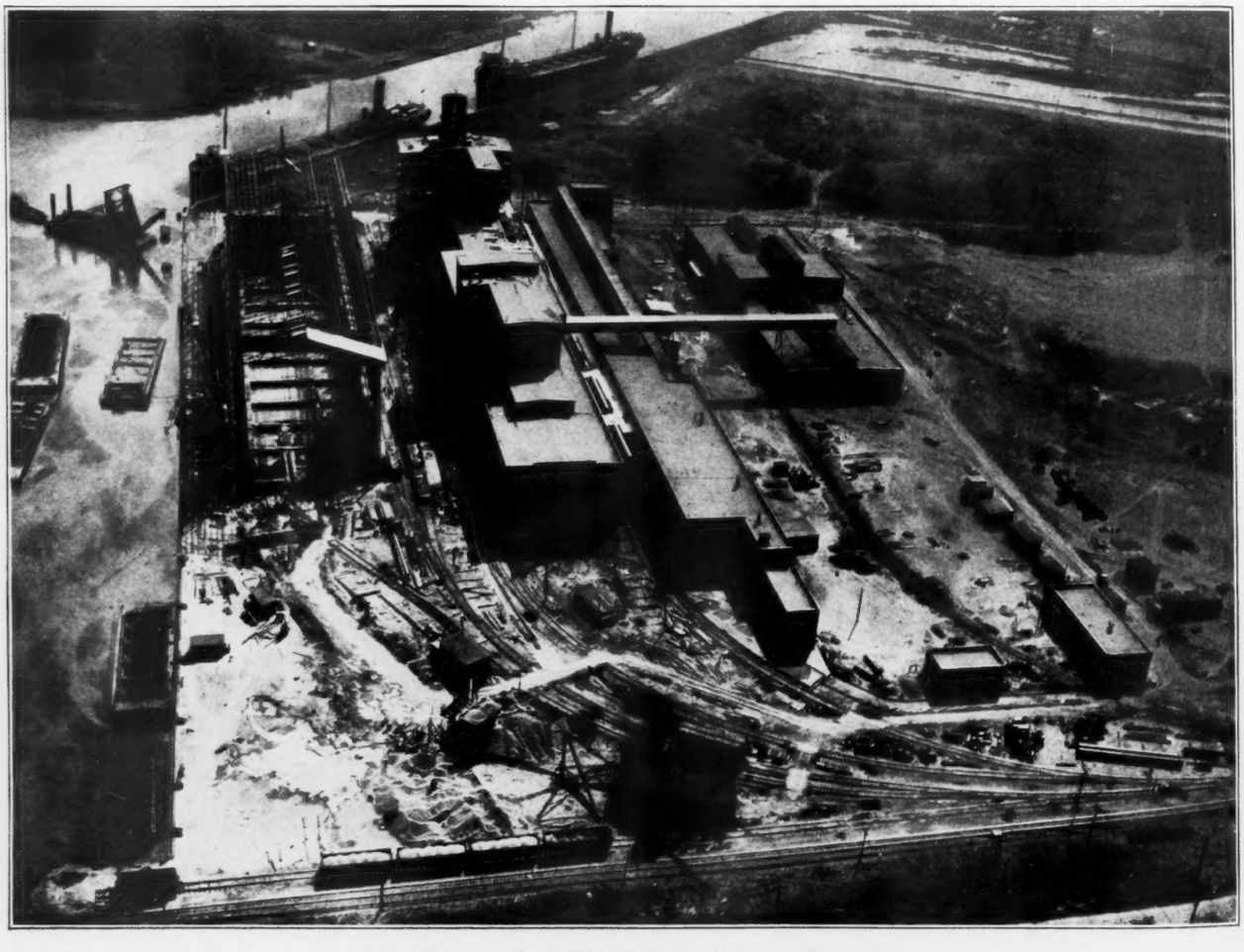
The main feature of this plant is the automatic hoisting of the raw rock.

United States Gypsum Starts Operation of Four New Plants

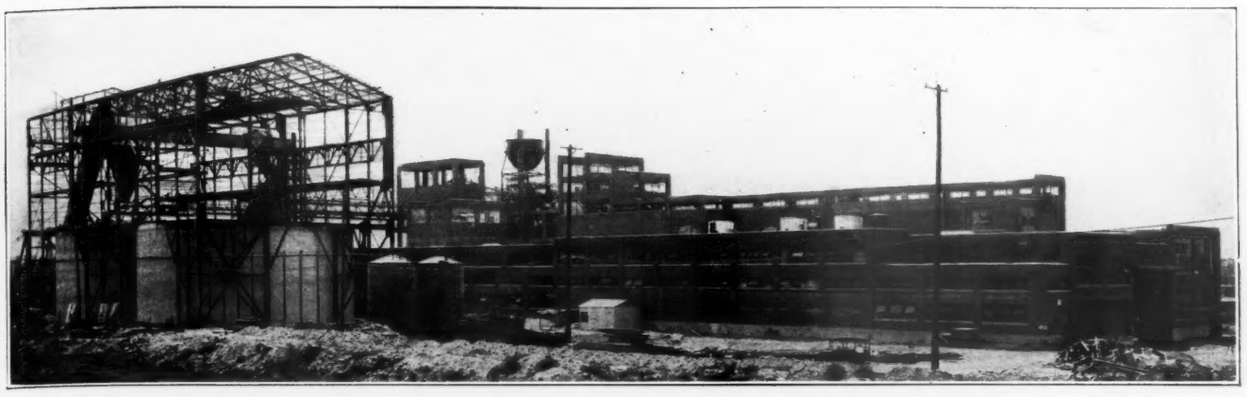
The Boston Plant

During 1929, the United States Gypsum Company completed and placed in operation four large plants strategically located close to four great cities. The first of these so-called "metropolitan plants" was put into commission at Charlestown, Mass., on March 9. This is commonly spoken of as the Boston plant. It comprises three main units—the calcining mill, the warehouse, and the board-and-block plant.

Each of these four new plants has water frontage, the Charlestown plant being along the Mystic River. Raw gypsum from the quarry in Nova Scotia is delivered to this plant by steamships owned by the company. A Mead-Morrison steam-driven crane unloads a cargo of stone in 24 hours. The stone is discharged from the bucket of the crane into a hopper which feeds it to a Robins conveyor belt. This belt travels over a Merrick Weightometer before the material reaches an in-



East Chicago plant, United States Gypsum Company



Rear view of United States Gypsum Company's Philadelphia plant

clined continuous-bucket elevator which carries it to the top of a battery of huge concrete silos. The bucket elevator delivers the stone to a Robins shuttle-belt conveying and distributing system which reaches all of the silos.

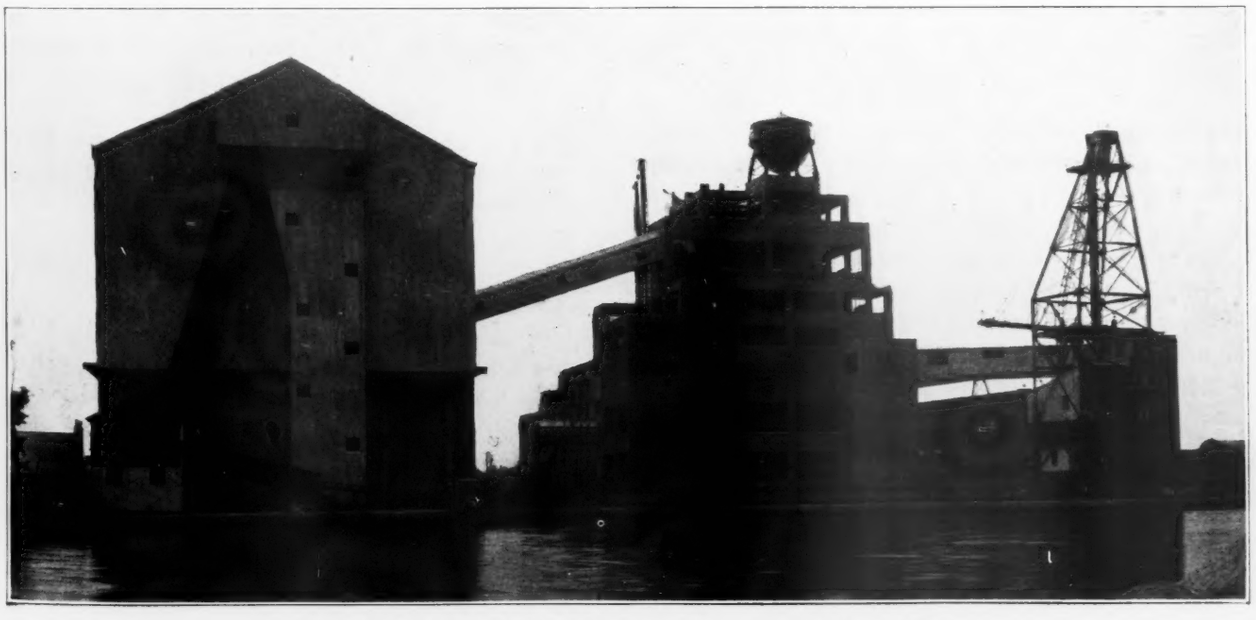
The silos are built above a tunnel wherein cars travel and transfer the stone from any silo to a system of belt conveyors which, in turn, deliver to a carrier which elevates the material to a live-roll grizzly. The oversize passes to a crusher. The throughs from the grizzly and crusher are taken by a bucket elevator to a Robins shuttle conveying and distributing belt system which is above two steel storage bins, each of 500-tons capacity. From one of these bins material is taken by a system of feeders and conveyors to the rotary dryer which uses oil as fuel. The material next is taken by a steel inclined carrier and a bucket elevator to a Hum-mer screen. The oversize is put through a swinghammer mill and rejoins the throughs from the screen, next passing to an air separator, the fines from which are taken by screw conveyors to the land-plaster bins. The coarse material from the separator goes first to a steel bin, thence to a pulverizing and air-separation system, and finally to the land-plaster bins.

The kettles, of the company's design, use oil as fuel. The stucco is discharged from them into hot pits from which it is removed by a drag-chain conveyor and distributed by bucket elevators and screw conveyors to warehouse bins or to the storage bin in the board-and-block plant.

An elaborate dust-elimination system includes units furnished by the By-Products Recoveries, Inc., for the mill building and W. W. Sly Manufacturing Company units in the warehouse. All dust is discharged into tunnels where it is sprayed by water that is handled by Ingersoll-Rand Cameron pumps. Bailey exhaust fans provide the draft for propelling the dust.

The East Chicago Plant

The second of these new plants, at East Chicago, Ind., began operation July 15. It is on the Indiana Harbor Canal with splendid dockage facilities for the boats which bring the raw gypsum from the quarry at Alabaster, Michigan. A boatload is unloaded in about 24 hours by means of a large tower,



Detroit plant, United States Gypsum Company, on River Rouge

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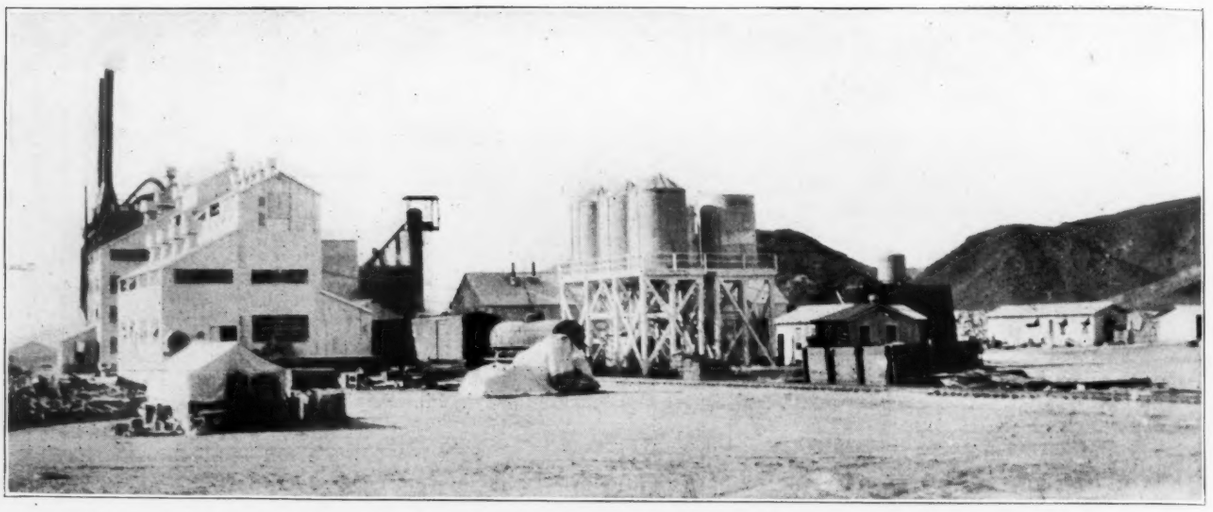


General view of the Midland plant of United States Gypsum Co.

the rock being conveyed into the storage bin which holds 125,000 tons, and is an outstanding structure. It is built upon piles and is of reinforced concrete, the walls being 40 ft. high. On top of this bin is a superstructure of steel.

The rock is reclaimed from this bin by a traveling crane with a 3-cu.yd. clamshell bucket and is deposited through a hopper and feeder onto a belt conveyor which leads to the calcining mill. Here the rock is crushed and screened, the fines going to one bin, the oversize to another. The fine rock next is fed by a belt conveyor to the dryer. Secondary crushing and screening complete the preparation, the coarser rock going to the rock bin, the fines to the separator-feed bins. From these latter bins the finer material goes to mechanical separators, the fines from which are delivered to the land-plaster bins. The coarser portion from the separators goes first to bins and thence through a pulverizer, finally reaching the same land-plaster bins. By a screw conveyor, the fine gypsum is fed to the calcining kettles, in which coal is used as fuel. The resulting stucco is discharged into steel pits and then withdrawn by a conveyor and elevator into the kettle stucco bins. After passing through a screen it is carried by screw conveyors to storage bins in the warehouse or to the block-and-board plant.

In this latter plant are produced Sheetrock wallboard, Rocklath, Standard X lath, and sheathing. The machinery here is of the company's own design.

Other products of the East Chicago plant are wall plasters, terra-cotta plaster, plate-glass stucco, and retarder for portland cement.

A feature of the plaster mill is a complete dust-collecting system which collects dust from various points and discharges it into tunnels where it is sprayed with water.

Every piece of machinery in the plant has its individual electric-motor drive.

The Philadelphia Plant

The Philadelphia plant of the United States Gypsum Company started operations August 19. It has a waterfront along the Schuylkill River and the raw stone is received by boat from the quarry in Nova Scotia. The rock, unloaded by a crane and, by conveyors, is stored in two concrete silos each 93 ft. inside diam. and 45 ft. high.

In reclaiming the rock from storage, it is handled by a traveling crane and grab bucket. Through a series of conveyors, a grizzly, and a crusher, the rock finally is delivered to two steel bins of 500-ton capacity. One of these bins supplies the calcines part of the mill while the other bin supplies the kettle side.

The Detroit Plant

This plant has frontage on the River Rouge and receives its rock from the same quarry on Lake Huron that supplies the East Chicago plant. Operations started here on August 29.

The raw storage is in three silos each 106 ft. in diam. and 40 ft. high. Their capacity is 80,000 tons. The method of boat unloading is similar to that at the Philadelphia plant.

The Philadelphia and Boston plants have most of the essential features of the other new plants herein described.

Mississippi Gravel Men Organize

Mississippi producers of sand and gravel met in Columbus, Miss., on Nov. 21 and organized the Mississippi Sand and Gravel Association. It is stated that every producer in the State had a representative attending the meeting.

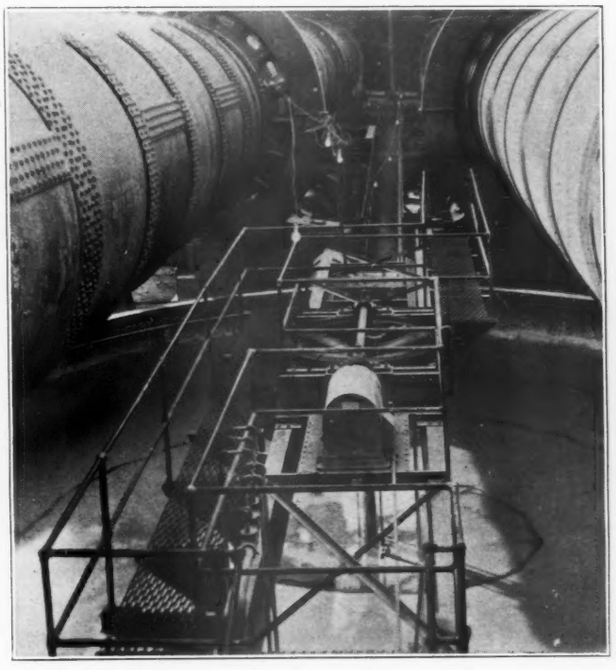
T. W. Maddix of Brookhaven was elected president; C. F. Harris, Columbus, vice-president; N. W. Rockett, Hattiesburg, treasurer; H. B. Weston, Logtown, recording secretary; R. L. McChesney, New Orleans, executive secretary. Additional directors are H. B. Rigby, R. M. Walters, W. B. Thigpin and Lee McCourt.

Cement Industry Fairly Prosperous During 1929 In Spite of Foreign Competition

Greatest Expansion Was in West and Southwest Where Many New Plants Were Built

THE production of portland cement during the year 1929, according to official statistics, has shown very little, if any, increase over 1928, although far above any previous year. This in spite of a considerable increase in capacity, due mainly to the new plants put into operation during the year and partly to the old plants which were enlarged.

A significant fact is that most of these plants are located in the west and southwest with a few in the middle west. Also a number of eastern plants have been shut down a large part of the year and many eastern companies have passed up their regular dividends. This was largely due to the importation of foreign cement which could be sold at a price far below that prevailing in this country. Measures now being taken, however, should minimize this competition and bring prices back to a level which will enable eastern producers to take part in the expansion and prosperity going on in other parts of the country. Some of the more important plants which went into operation during the past year are described in the following pages.



Driving mechanism in slurry mixing tank under the kilns

The Pacific Coast Cement Company, Seattle, Wash.

The first of the new 1929 cement plants to go into operation was the 3,400-bbl. wet-process plant of the Pacific Coast Cement Company at Seattle, Wash. This plant has tidewater dockage, direct spur service to five railroads and is also accessible by highway. It is on a 19-acre tract about 4 mi. from the business center of Seattle. The entire plant is of the most modern design and permanent construction and has a number of unusual and interesting features. It went into operation in February.

The limestone quarry is on Dall Island, Alaska, about 700 miles from Seattle. Quarrying is an open-face blasting operation. A Sanderson-Cyclone well drill and Ingersoll-Rand air drills are used. A Bucyrus 50B 2-yd. electric shovel loads the stone into Pacific Car and Foundry Co. 8-yd. steel quarry

Pacific Coast Company's new plant at Seattle, Wash from the east. Steamer being unloaded in background

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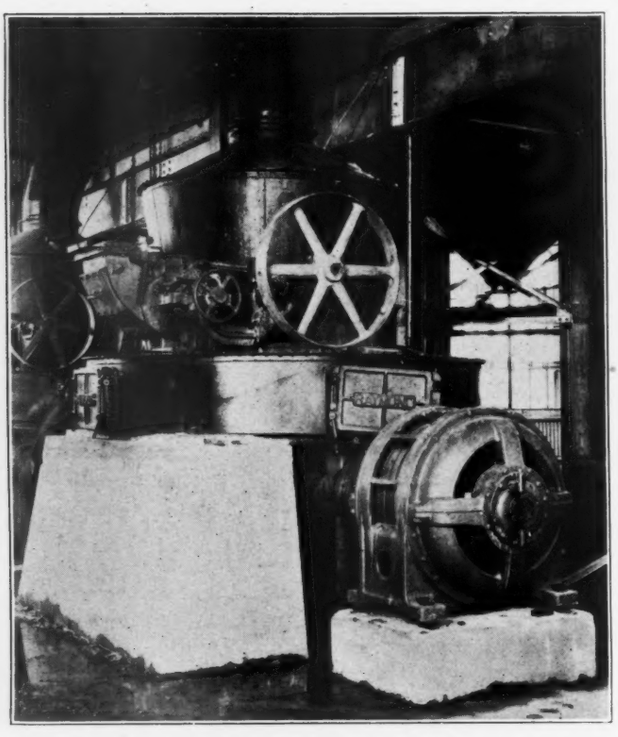


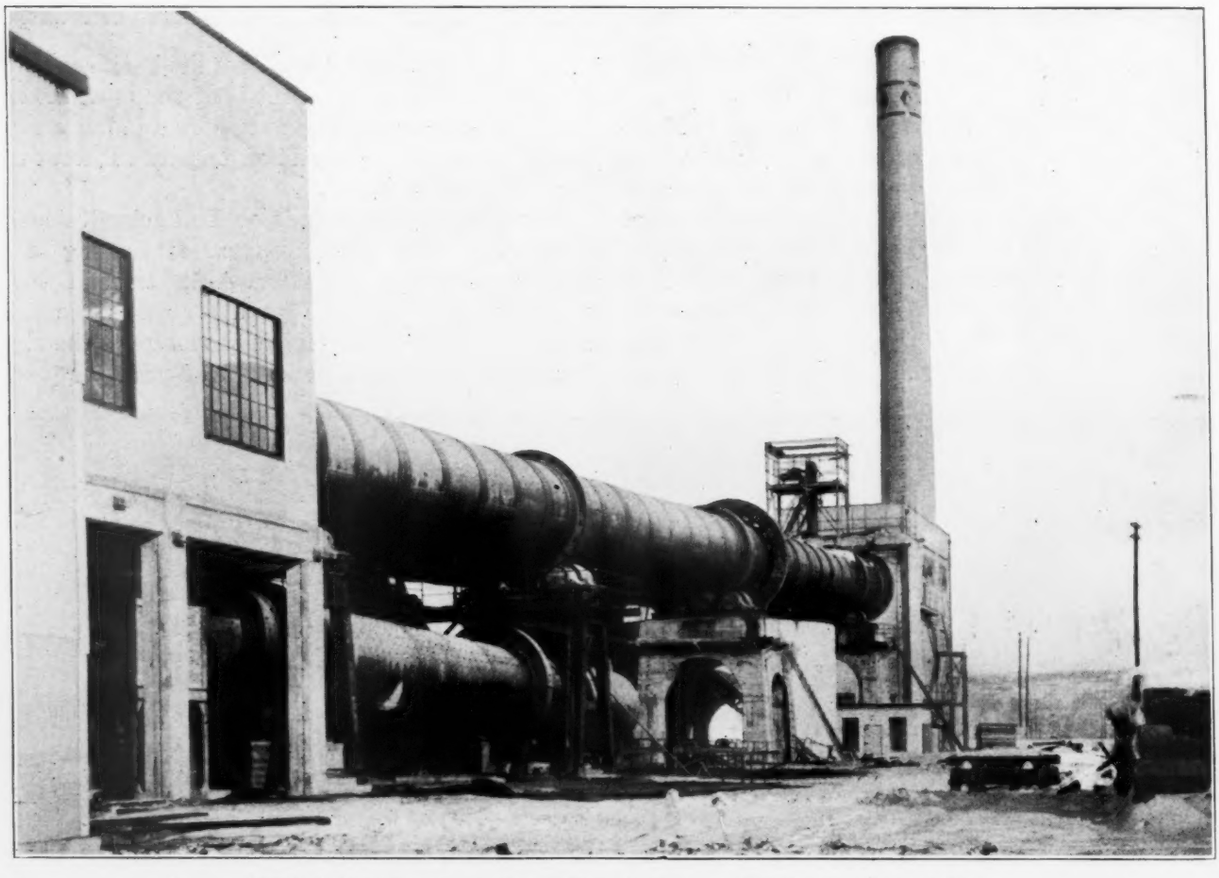
One of the two air-swept coal grinding mills

cars. Two 8-ton Plymouth gasoline locomotives haul the stone to the 42-in. by 48-in. Traylor "Bulldog" primary jaw crusher. A Traylor 4-ft. by 12-ft. pan feeder discharges into a Dixie "Mogul" hammermill. A belt conveyor deposits the stone into a storage bin from which another conveyor discharges directly into the ships' holds. A round trip to the Seattle plant and return takes about ten days. The ships have a capacity of 6,300 tons each.

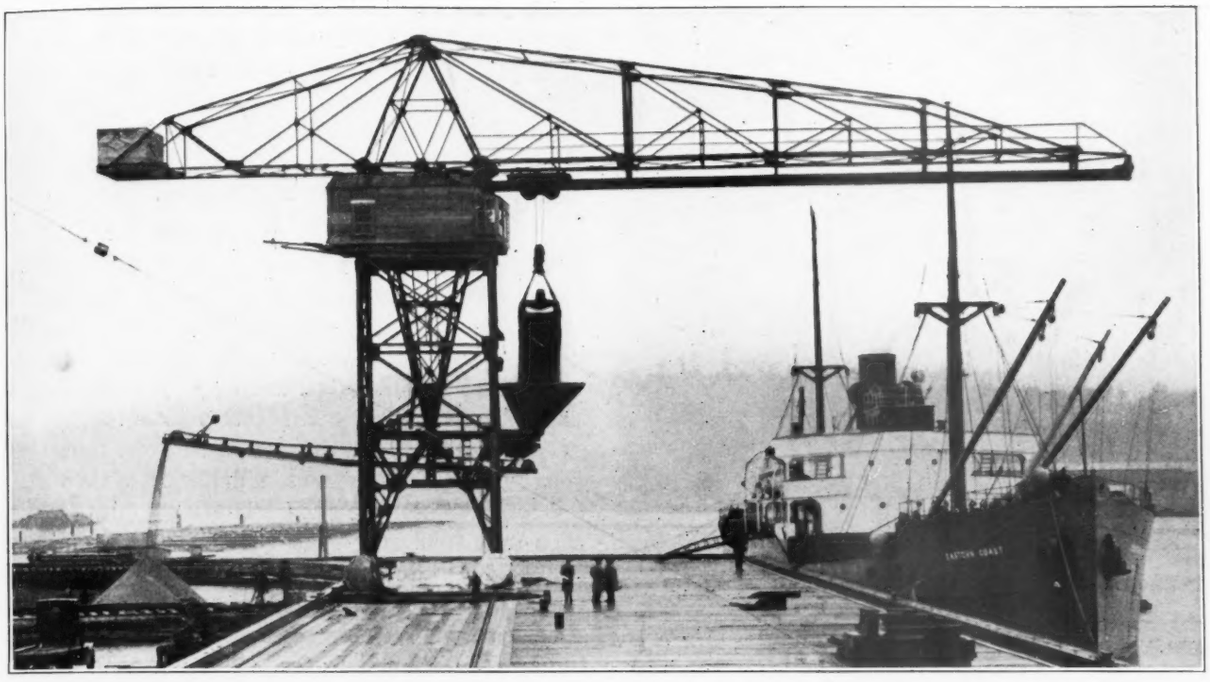
The hammerhead crane at the plant dock was designed and built by the Colby Steel and Engineering Company. This has a 100-ft. boom at a height of 60 ft. and operates a 4-yd. Owen bucket. It will lift 13 tons at 100-ft. radius and has an unloading capacity of 225-t.p.h. The bucket discharges into a hopper and belt conveyor on the crane which discharge to a 100,000-ton storage pile. This allows the crane to concentrate on unloading, moving from hatch to hatch of the boat as desired.

The clay deposit is 2½ mi. from the plant. A Bucyrus 1-yd. gasoline shovel loads into trucks which haul to the plant, discharging directly into the 26-ft. Traylor wash mill. A 4-in. Wilfley pump conveys the slip into two 6,000-bbl. capacity concrete tanks. Each of these has a Dorr agitator and air jets. They are used alternately, one being filled while the other is being drawn.

The crushed rock is delivered by the hammerhead crane which runs onto a turntable to a track alongside the plant or by a 9-ton Milwaukee bridge crane with a 3-yd. Williams bucket to reinforced



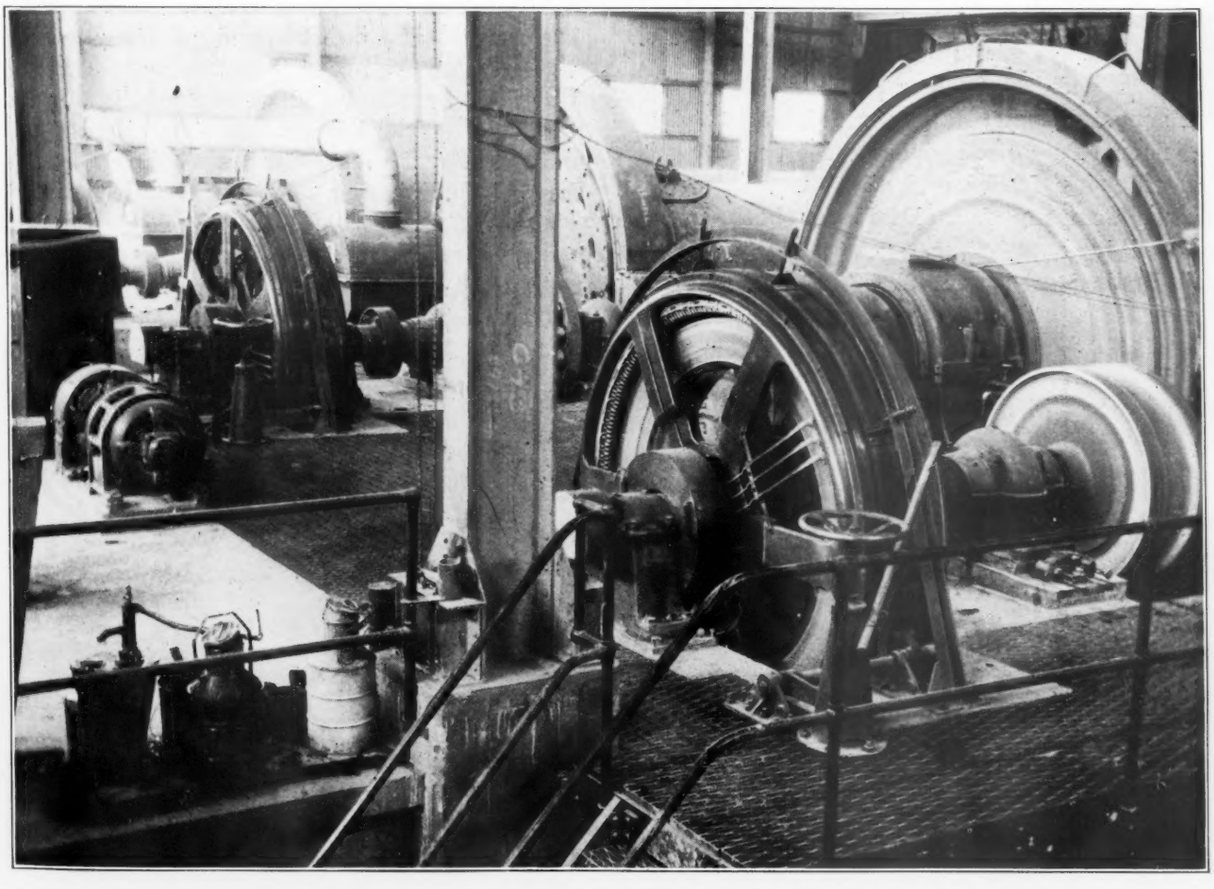
Kilns and coolers from the southwest, dust precipitator house at right



Hammerhead crane unloading stone from steamer "Eastern Coast" to stockpiles at dock of Pacific Coast Cement Co.

concrete bins. Schaffer poidometers feed to the three Traylor 7-ft. by 45-ft. three-compartment mills. Clay slip is fed to the mills by Traylor ferris-wheel feeders driven from the poidometers at a fixed speed ratio.

The slurry is carried to four concrete sumps



General view of mill room at Pacific Coast plant showing two of the raw grinding mills in foreground, with finish mills and their connections to dust arrester in left background. Motor generator set for excitation of super-synchronous motors at left

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Electric shovel in quarry loading cars of stone for Republic plant

from which a 4-in. Wilfley pump feeds to four concrete slurry tanks. Two similar pumps are used to move the slurry from tank to tank if desired or to the kiln tank. There are four of these slurry tanks each identical with the clay slip tanks having Dorr agitators. The concrete kiln feed tank is located under the feed end of the kilns and slurry is fed to them by two Traylor ferris-wheel feeders.

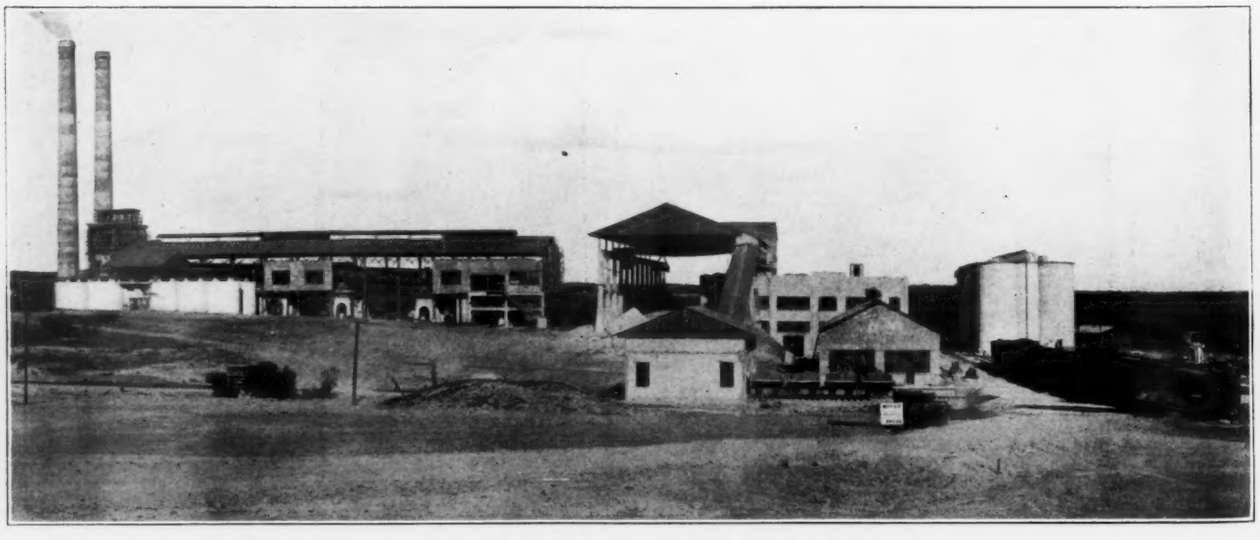
The two Traylor kilns are each 11 ft. 3 in. in diameter and 240 ft. long and have four single-roll supports. They are controlled from the burning floor. Pulverized coal is fed by a Bailey No. 120 metering feeder and air by an American Blower Company fan. Draft for both kilns is induced by a 200-ft. concrete stack which was built by the Rust Engineering Company. The draft passes through a Cottrell dust precipitating plant.

The clinker drops from the kilns through fire-brick chambers to two Traylor 9-ft. by 90-ft. coolers on single rolls. These discharge through a bar grizzly to a series of Link-Belt conveyors and elevators to an outdoor clinker storage pile. The same Milwaukee bridge crane which handles the raw material distributes the clinker and rehandles it into the dry mill feed hopper.

Gypsum is purchased and stored in the clinker storage area. It is measured into the finishing mill by a Stevenson adjustable rotary feeder. This is mechanically connected with the 20-in. Schaffer poidometer which weighs the clinker into the mill. The finishing is done by a Traylor 7-ft. by 45-ft. three-compartment mill similar to the raw grinding mills. A 6-in. Fuller-Kinyon pump conveys the finished cement a distance of 500 ft. to the concrete storage silos. There are nine of these silos and four star bins with a total capacity of 90,000 bbl. Screw conveyors carry the cement from the silos to the basement of the stockhouse. A series of conveyors and elevators discharge into the packer bin which feeds the two 3-tube Bates packers. Cement can be loaded into trucks or cars and there are also facilities for loading bulk cement.

The plant is up-to-date in every detail and was designed to produce regular portland cement, high early strength cement, or any kind of special cement desired. It has a capacity of 3,400 bbl. daily. Major S. E. Hutton, chief engineer, and research engineer for the parent Pacific Coast Company, designed the plant and supervised its construction. All of the concrete silos and slurry tanks and the cement pack-house were built by the Macdonald Engineering Company. All conveying equipment was furnished by the Link-Belt Company and with a few exceptions General Electric motors are used.

The Pacific Coast Cement Company is a subsidiary of the Pacific Coast Company of which the



General view of Republic Portland Cement Company's new plant at Longhorn, Texas

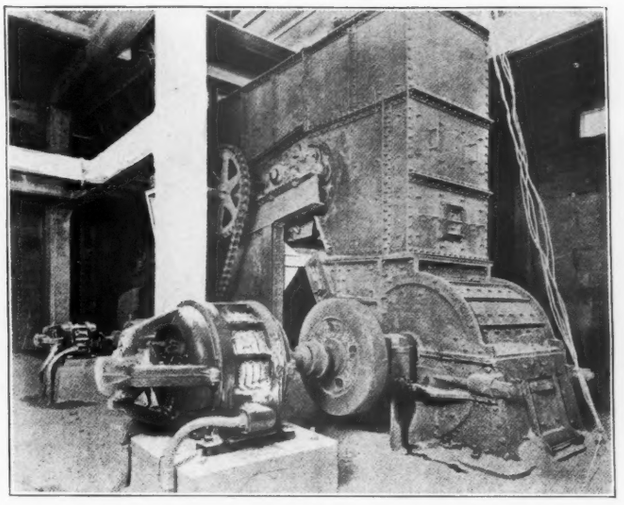
officers are: Walter Barnum, president; E. C. Ward, vice-president and general manager; N. D. Moore, vice-president in charge of operations; and Major S. E. Hutton, research engineer. The personnel of the Pacific Coast Cement Company are: W. H. Greene, works manager; Darwin Meisnest, assistant sales manager; N. H. Nelson, chief chemist; E. H. Serman, master mechanic; and Carl English, purchasing agent.

Republic Portland Cement Company Longhorn, Texas

The Republic Portland Cement Company began production at its new plant at Longhorn, Texas, 9 mi. northeast of San Antonio, in August, 1929. This is a wet-process plant with a capacity of 3,600 bbl. per day and is the second new cement plant to go into operation in Texas within the last few months, making a total of nine now operating in that state. Incidentally, with these two new plants, Texas now ranks sixth in number of cement plants, being exceeded only by Pennsylvania, Michigan, New York, California and Ohio in the order named.

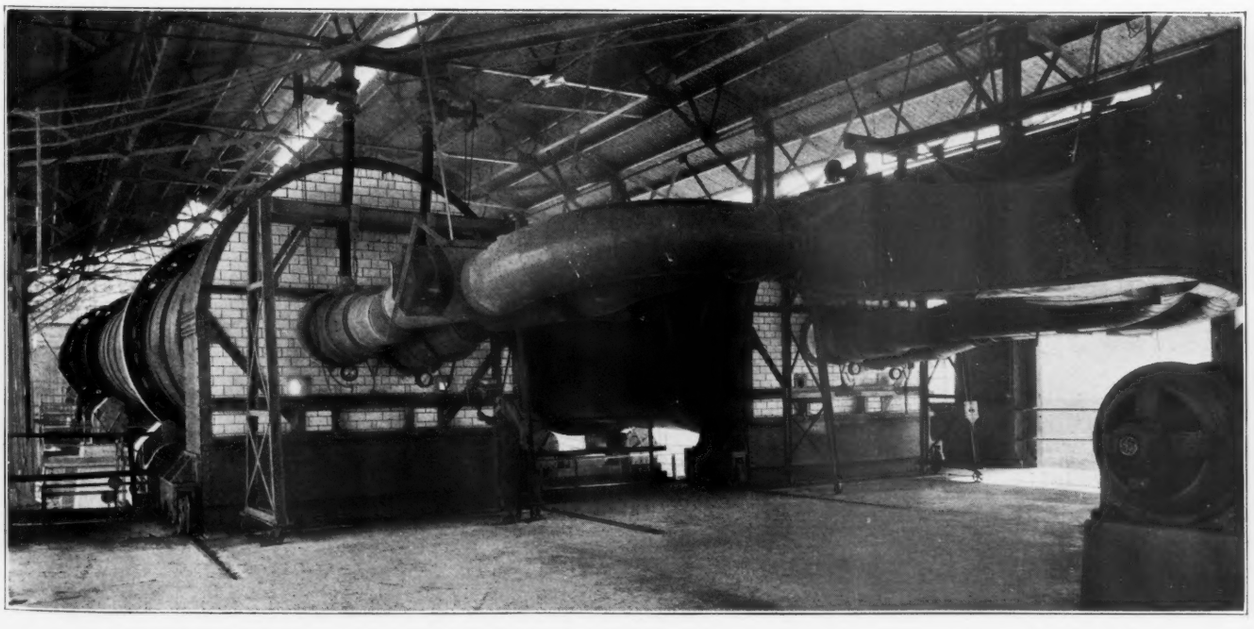
The 475 acres on which the plant is located contains a soft limestone varying in calcium carbonate content and containing all the ingredients necessary for the manufacture of cement except gypsum. Drilling is done by a Keystone well drill and an Ingersoll-Rand wagon drill. A Marion Type 480 2½-cu. yd. electric caterpillar shovel loads into trains of six 8-cu. yd. Easton side-dump cars which are hauled several hundred feet to the plant by a Plymouth gasoline locomotive.

A Shepard overhead hoist dumps the cars into a hopper from which the stone is fed by a Stephens-Adamson pan feeder to the Dixie "Mogul" hammermill which has a capacity of 250 t.p.h. A 36-in. 400-ft. centers Link-Belt belt conveyor with Hewitt gutta percha belting takes the crushed stone either to storage bins or to the roofed over raw storage structure. This is 300 ft. long by 70 ft. wide and is spanned by a 7½-ton P. and H. overhead crane operating a 3-cu. yd. Williams clamshell bucket. This storage space is also used for clinker and gypsum.



The hammermill crusher which does all of the reduction crushing necessary at this plant

The limestone is fed from the three concrete bins by rotary table feeders to the two Allis-Chalmers 7-ft. by 40-ft. raw grinding Compeb mills. The resulting slurry goes to a concrete surge tank with screw agitators from which it is pumped to the concrete slurry tanks by two 6-in. Wilfley centrifugal slurry pumps. The six correcting tanks are each 20 ft. in diameter by 30



General view of firing floor at Republic plant. Note air and gas feed arrangement for firing kilns

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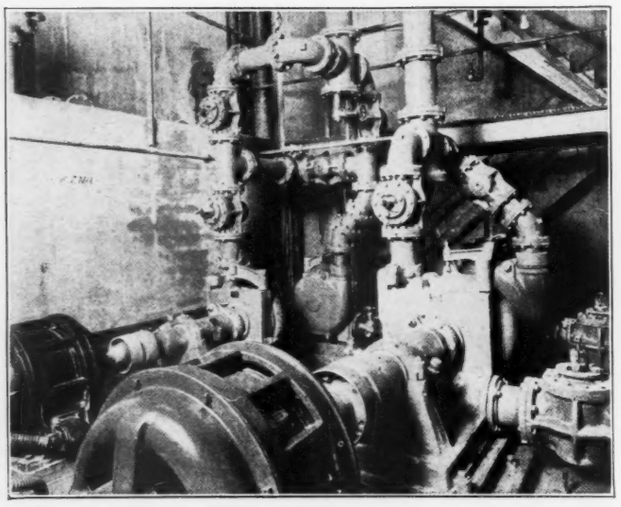
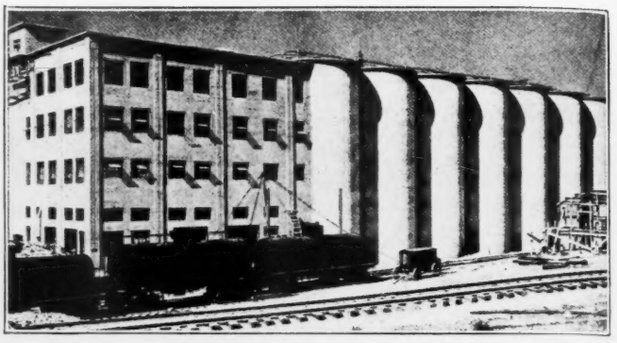


Two of the slurry pumps used in the Republic plant



Cement storage silos and packhouse at Republic plant

ft. high. They discharge to a concrete sump from which two 6-in. Wilfley pumps feed the slurry into the four kiln feed tanks which are each 24 ft. in diameter by 30 ft. high. All of the tanks are equipped with Meade agitators.

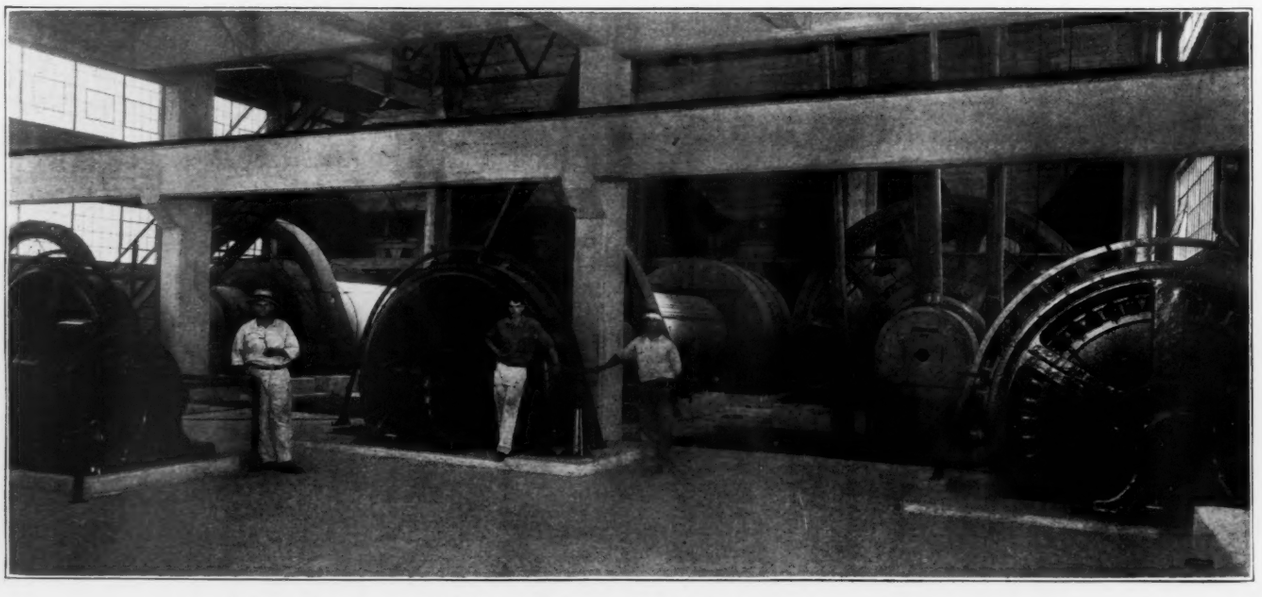
The feed tanks discharge into a concrete sump from which two 4-in. Wilfley pumps feed the slurry to the kilns by ferris-wheel feeders. The two Allis-Chalmers kilns are each 250 ft. long by 11 ft. in diameter. They are natural-gas fired and draft is furnished by a 90-in. Buffalo blower. The kilns discharge into two Allis-Chalmers 100-ft. by 10-ft. coolers which discharge into the clinker pit in the open storage previously described.

The two finish mills are of the same size and type as the two raw Compeb mills and are located in the same building. Clinker and gypsum are fed from bins to the mills by table feeders. The mills discharge to screw conveyors which feed two 6-in. Fuller-Kinyon pumps. These convey the cement to the storage silos. A "Norblo" dust-collecting system is used in the mill building.

The cement storage consists of 14 large bins and two small ones which, with their interstices, have a total capacity of 150,000 bbl. Screw conveyors carry the cement to the adjoining packhouse where it is sacked by four Bates 4-bag packers. Shipments can be made by rail or truck as the plant is located on the M. K. and T. and the I. and G. N. railroads and on the main highway between San Antonio and Austin.

Electric power is purchased at 2,300 volts from the San Antonio Public Service Company; gas is purchased from the Southern Gas Company; and gypsum is shipped a distance of 200 mi. from Falfurias. The plant office and the completely equipped laboratory building are of pleasing architecture and were designed to harmonize with the landscaped appearance the property will have when the sodding, grading and planting are completed.

The General Electric Company furnished all motors and electrical equipment including switchboards, transformers, etc. The kilns, coolers and mills were furnished by the Allis-Chalmers Manufacturing Company. James speed reducers are



Some of the raw and finish grinding mills and their super-synchronous motors

Town of Longhorn built for employes at Republic plant. Water tower shown back of laboratory building; plant office, right

used throughout the plant for driving the crusher pan feeder, belt conveyor, slurry agitators and similar purposes. The Bland Engineering Company built the slurry tanks, silos and packhouses and the two 200-ft. concrete chimneys were built by the Heine Chimney Company. The plant was so designed that it can be enlarged at any time without interference to production. The Terrell Bartlett Engineers, Inc., were engineers with Richard K. Meade and Company as consulting engineers.

Offices are maintained in the Smith-Young Tower, San Antonio. Officers of the company are: J. H. Smith, president; W. M. Thornton, vice-president; B. R. Collins, secretary; A. F. Sayers, superintendent; and G. P. Horn, chief chemist.

Monolith Portland Midwest Company Laramie, Wyo.

The Monolith Portland Midwest Company, a subsidiary of the Monolith Portland Cement Company, commenced production at the new Laramie, Wyo., plant early in 1929. This is a wet-process plant with an initial capacity of 2,000 bbl. per day but is so designed that it can be enlarged to three times that capacity without interfering with operations. It is the first cement plant to be built in Wyoming and produces both regular portland cement and a special waterproof plastic cement.

The plant is located on a property of 2,200 acres about two and one-half miles east of Laramie. The deposit is a highly shattered and fairly soft lime-

Monolith plant with machine shop at right and kiln and coal drying buildings in background

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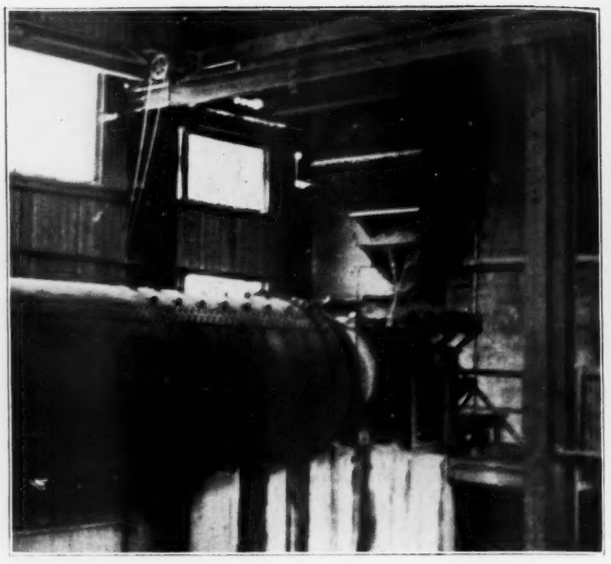
Train of cars being loaded in quarry

stone which is loaded into cars by a Marion 1-yd. steam shovel, no primary or secondary blasting being required. The stone varies in lime content from one end of the quarry to the other and requires no addition of clay or silica. These features make possible a rough blending of materials in the quarry. The stone is hauled in special 30-cu. yd. capacity Koppel cars which are hauled a distance of nine miles to the plant by a 65-ton Baldwin steam locomotive.

At the plant the cars are dumped into the 36-in. Traylor "Bulldog" gyratory primary crusher. A

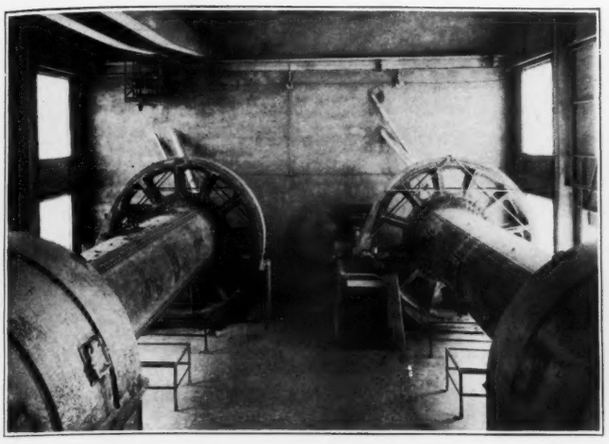


The raw grinding mill

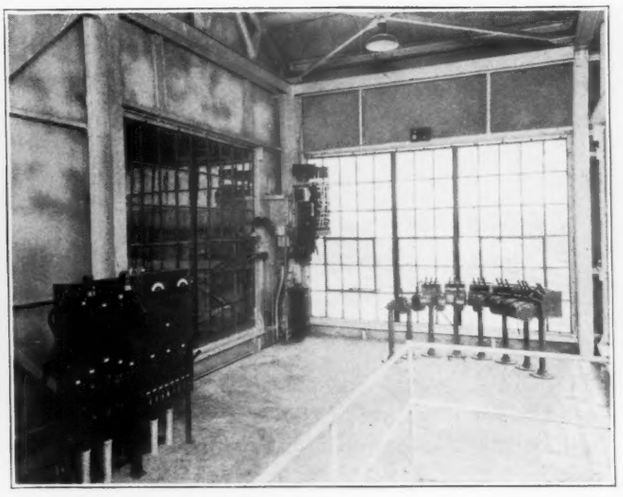
steel pan conveyor carries the crushed stone to a surge bin from which a Pennsylvania reciprocating feeder discharges into the Pennsylvania No. 12 hammermill. A series of conveyors discharge into a covered storage building 61 ft. wide and 242 ft. long which is divided into compartments for stone, clinker, gypsite and coal.

A 40-ton Pawling and Harnischfeger overhead crane with a span of 76 ft. and handling a 3-cu. yd. Hayward clamshell bucket rehandles the stone into a 650-bbl. steel hopper over the raw mill. A Smidth disc feeder discharges to a Smidth 7-ft. by 39-ft. 3-compartment "Unidan" mill for raw grinding. The slurry flows to a concrete sump from which it is taken by two 4-in. Wilfley pumps to the three correcting tanks which are each 20 ft. in diameter

Cement silos and packhouse of Monolith plant at Laramie, Wyo.



Finish mill (left) and raw mill (right) of new Atlas plant

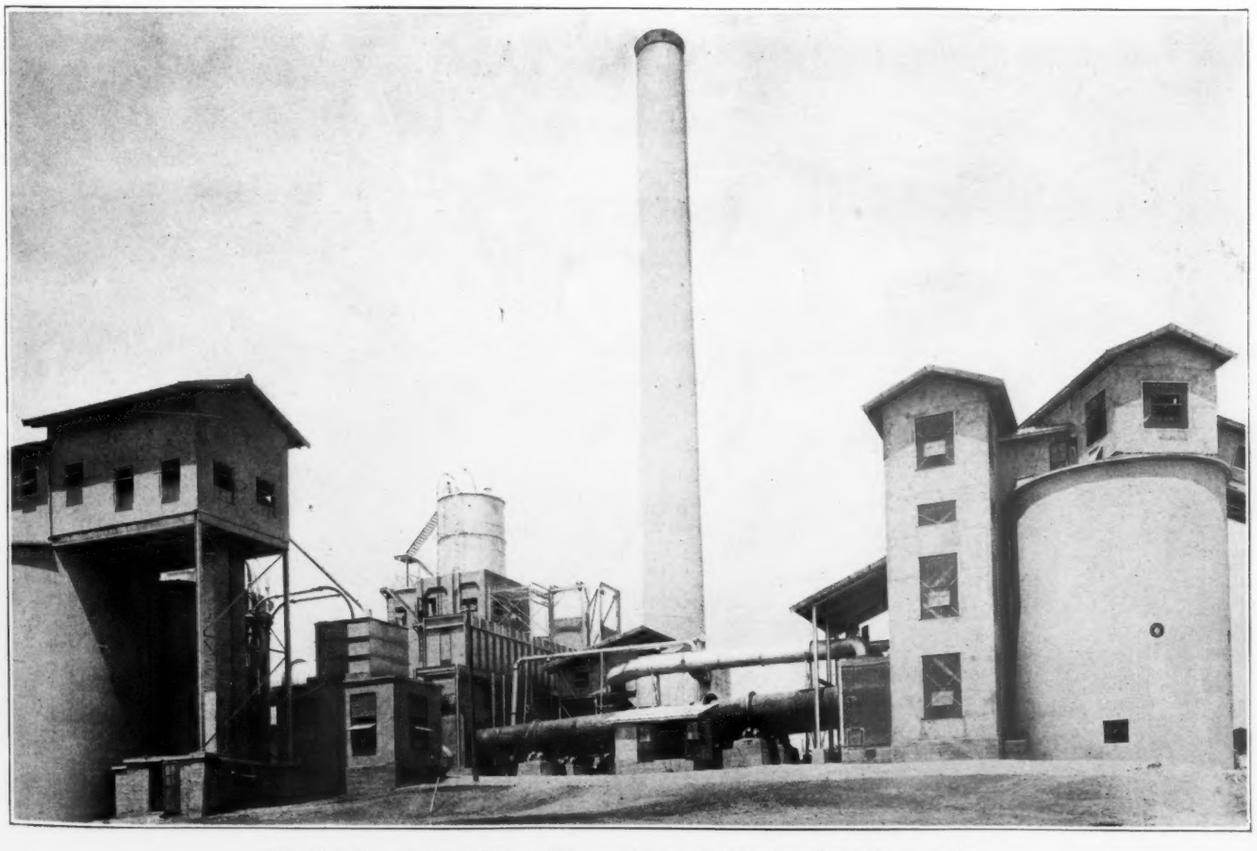


Control room, electric haulage system

by 18 ft. deep. These have Smidth mechanical and air agitators. The slurry discharges by gravity into a rectangular storage basin 125 ft. long by 25 ft. wide and 21 ft. deep, equipped with a Smidth traveling agitator.

Two 4-in. Wilfley pumps convey the slurry to a Smidth scoop feeder which supplies the kiln. The kiln, which is 343 ft. long and 10 ft. and 11 ft. 3 in. in diameter, was designed by F. L. Smidth and Company and built by the Traylor Engineering and Manufacturing Company and is equipped with a single-row ten-tube Unax cooler. The clinker discharges into a Smidth "Skipulter" which discharges into a bucket elevator to the open storage.

Clinker and gypsite feed from their respective bins to another Smidth "Unidan" mill similar to the raw grinding mill. The finished cement discharges into a screw conveyor feeding a 6-in. Fuller-Kinyon pump which conveys the cement to the cement storage silos. The six concrete silos are each 32 ft. in diameter by 80 ft. high and with their interstices and outside pockets have a capacity of 120,000 bbl. Smidth "Exbiners" draw the cement from the silos and a series of screw conveyors and elevators take it to the packhouse. Two 3-valve Bates baggers sack the cement which is shipped either by truck or by rail.



Partial view of new Waco, Texas, plant of Atlas Portland Cement Co.

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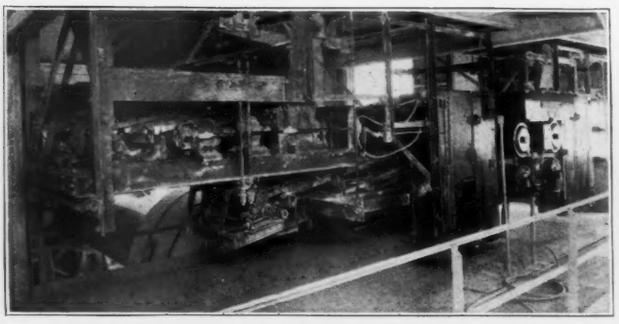
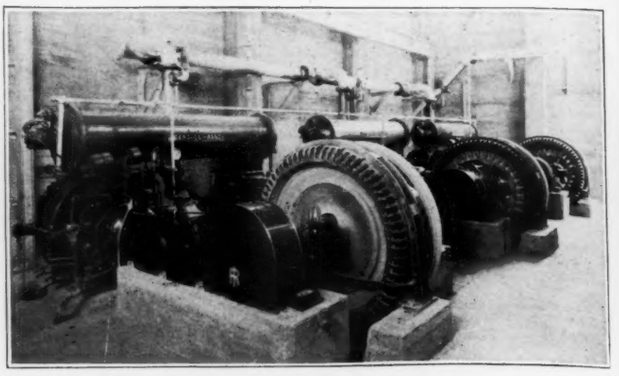


Scales at the raw mill



Air compressors in mill building

F. L. Smidth and Company designed and supervised the construction of the plant. The Macdonald Engineering Company did the actual construction work including the 150-ft. concrete stack. Chain Belt "Rex" belt conveyors and Pioneer belting are used. Motors were furnished by the Electric Machinery Manufacturing Company and Sly dust arrestors are used.

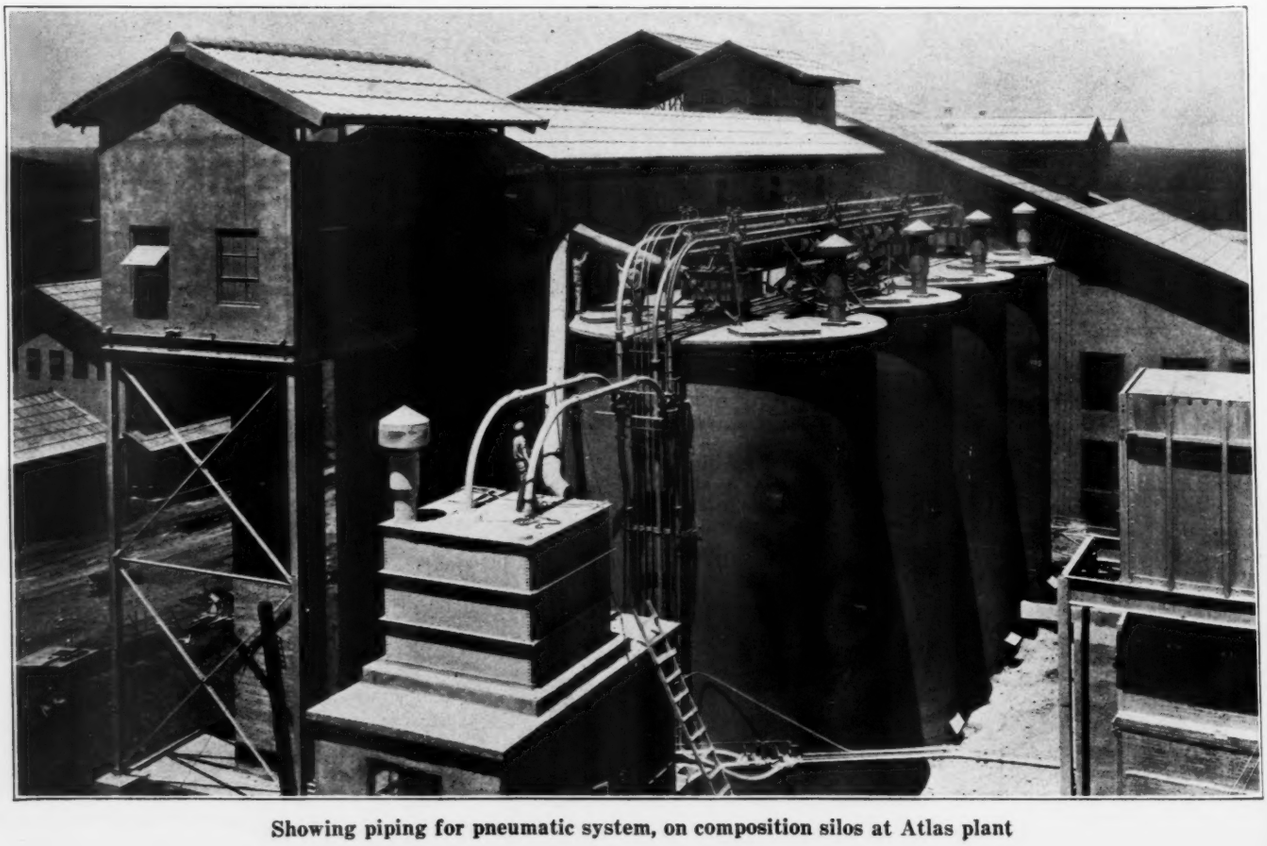
Officers are: Coy Burnett, president; Alfred F. Smith, vice-president; J. J. Calkins, secretary and treasurer; and W. S. Trueblood, production manager. F. J. Anderson is plant superintendent.

Atlas Portland Cement Company (of Texas), Waco, Texas

The new 2,400-bbl. dry-process plant of the Atlas Portland Cement Company (of Texas) located 9 mi. from Waco, Texas, made its first cement shipments on June 4 of this year. As construction was not begun until September 24, 1928, this probably was record speed. In addition to its being a dry-process plant, there are several other unusual features.

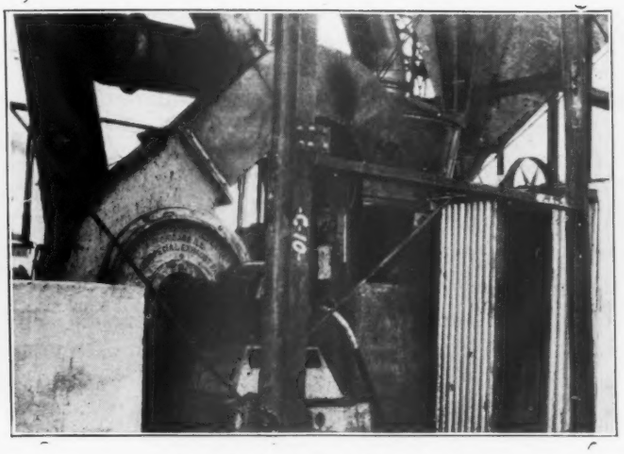
The stone is loaded in the quarry by a Bucyrus-Erie 1¾-yd. electric shovel and the blast holes are drilled by a Sanderson "Cyclone" electric well drill. The Woodford haulage system is used to haul both the shale and the stone to the plant. One control tower operates all of the cars which are of 10-cu. yd. capacity each.

The cars discharge into a hopper from which a reciprocating table feeder discharges into the Pennsylvania No. 60 hammermill. This reduces quarry-size stone and shale to such fineness that no further crushing is required. A belt conveyor carries the material to a concrete storage silo with four compartments which can be used for shale



Showing piping for pneumatic system, on composition silos at Atlas plant

Gasoline shovel in quarry at Idaho plant



Coal grinding and drying mill

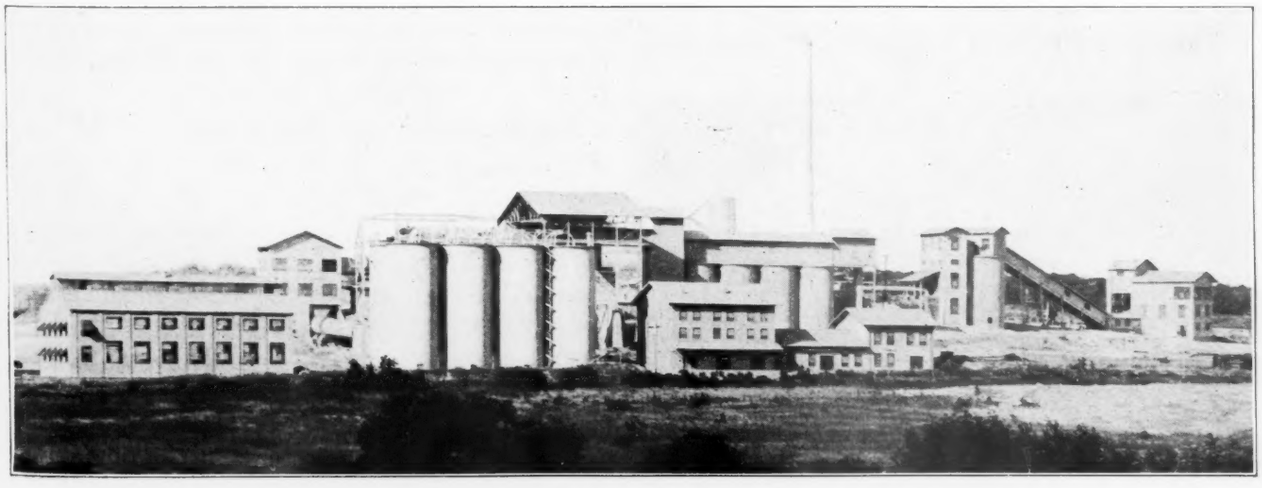
or limestone as desired. A second conveyor is fed by gates from these compartments and feeds the two Vulcan 6-ft. by 80-ft. rotary dryers. These can be heated by the exhaust gases from the kiln, or if this is not in operation, natural gas can be used. Tate-Jones gas burners are used in this case. An American Blower Company fan furnishes the necessary air and the dryer gases are blown by a Sturtevant fan through a "Vorticose" dust collector.

The dryers discharge by a conveyor and elevator to four of eight concrete storage silos. Two are used for stone and two for shale. The stone and shale are drawn separately and pass over Richardson "Convey-a-weigh" scales which automatically proportion the raw mix. A single Allis-Chalmers 8-ft. by 7-ft. by 45-ft Compeb mill is used for raw grinding. A 6-in. Fuller-Kinyon pump conveys the ground material to four blending silos alongside the four dryer storage silos. These also have four compartments each. The Fuller-Kinyon dry-blending system is used to effect an accurate mix in these silos.

Another Fuller-Kinyon pump takes the blended material to the kiln feed tank. A screw conveyor feeds the 11-ft. by 250-ft. Allis-Chalmers kiln which is fired by natural gas. The clinker drops through a vertical cooler to a 10-ft. by 142-ft. Allis-Chalmers rotary cooler. The cooled clinker passes over another Richardson scale which keeps a check on the daily production of clinker. The scales discharge to a pit in the open clinker and gypsum storage. A 15-ton Cleveland overhead crane with a 3-cu. yd. Hayward clamshell bucket distributes the clinker and feeds gypsum and clinker to bins over the finish mill. These discharge to another set of Richardson scales which proportion them and feed to the Allis-Chalmers finish-grinding Compeb mill which is the same size as the raw mill and is located in the same building.

The finished cement is carried by a 6-in. Fuller-Kinyon pump to eight concrete storage silos each 26 ft. in diameter by 60 ft. high. These eight silos and their three interstice bins are discharged by two portable Fuller-Kinyon pumps under the silos to the pack-house. Three Bates packers sack the cement which can be loaded directly into either trucks or railroad cars. A 3-in. Fuller-Kinyon pump returns any spilled cement to the packer feed bins.

General Electric Allis-Chalmers and Westinghouse motors are used and drives are through



General view of new plant at Atlas Portland Cement Co., at Waco, Texas

Jones, Cleveland and Falk speed reducers. Robins belt conveyors and Goodyear conveyor belting are used and all dust-collecting units were furnished by Dust Recovery, Inc. The plant was designed by the company which also did all construction work. This work was done under the supervision of A. G. Croll, who is general superintendent of all the company's plants.

The company is owned by the Atlas Portland Cement Company of New York City, which also operates a number of other plants in various parts of the country. Officers are: John R. Morron, president; Howard W. Maxwell, L. R. Burch and A. G. Croll, vice-president: and H. E. Harding, secretary and treasurer.

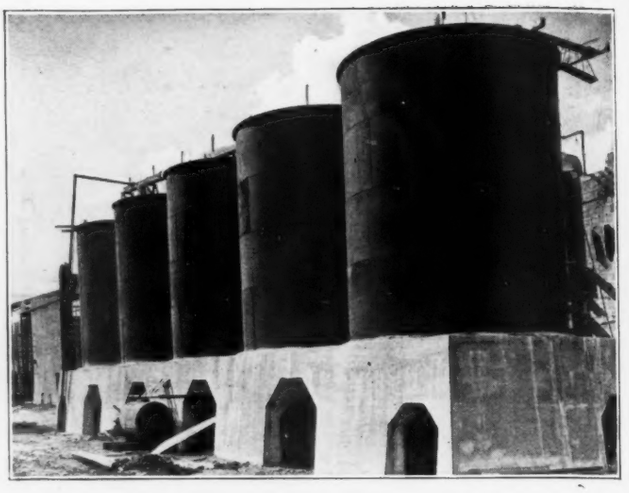
Idaho Portland Cement Company, Inkom, Idaho

Idaho's first cement plant went into operation on June 6 of this year. This is a single kiln wet process plant with a capacity of 1,500 bbl. per day and is equipped to manufacture regular cement only. The plant was designed to take full advantage of some of the natural features of the property. One of the features which is responsible for a large saving in operating costs is the shattered limestone deposit which requires no primary or secondary blasting. It is also intermixed with shale forming an almost ideal raw mix. Another feature is the location of the quarry on a hill 100 ft. above the plant, effecting a saving in transportation costs.

A Speeder ½-cu. yd. gasoline shovel and a General ¾-cu. yd. shovel load the material into a train of six 5-cu. yd. Western side-dump cars which are hauled to the plant by a 7-ton General Machinery Company gasoline locomotive. The cars discharge over a 3-in. rail grizzly into the 12-in. by 24-in. Reliance jaw crusher. The crushed material goes to a Universal vibrating screen, the oversize going to a 36-in. by 24-in. Jeffrey hammermill. A 24-in. belt conveyor on 77-ft. centers then carries the material to wooden storage bins with a total capacity of 800 tons.

Three variable speed feeders draw the material in any proportion desired to a 20-in. belt conveyor on 108-ft. centers and a bucket elevator which feeds the raw mill storage bins. An Allis-Chalmers table feeder serves the Allis-Chalmers 8-ft. by 7-ft. by 26-ft. Compeb mill. The slurry is pumped by a 3-in. Wilfley pump to the five steel slurry tanks which are each 20 ft. in diameter by 25 ft. high.

The kiln at the Idaho plant



Slurry silos

A 4-in. Krogh pump feeds the slurry to the kiln-feed tank and a 3-in. Union pump supplies the Allis-Chalmers ferris-wheel kiln feeder. The Allis-Chalmers kiln is 10 ft. in diameter and 200 ft. long and is powdered-coal fired. The clinker falls to a Link-Belt drag chain conveyor and bucket elevator which discharge to a storage pile where it is distributed by a stiff-leg derrick with a clamshell bucket. This derrick also loads clinker and gypsum to the steel finish-mill feed bin. An Allis-Chalmers table feeder draws the material to the finish mill which is of the same size and make as the raw grinding mill. The finished cement is conveyed by a 5-in. Fuller-Kinyon pump to the two temporary stockhouse bins. A screw conveyor and bucket elevator feed the cement to an 18-in. by 12-ft. General Machinery Company rotary screen with 10-mesh cloth. The screened cement drops into a 160-bbl. capacity steel bin which feeds the Bates 3-valve packer. Shipments are made by rail or truck.

Allis-Chalmers and Howell motors are used throughout the plant and all important drives are through Falk speed reducers. Screw conveyors were furnished by the Link-Belt Company and belt conveyors, bucket elevators, slurry agitators, and coal mill equipment by the General Machinery Company.

Officers are: E. J. Simons, president; J. B. Maxfield, vice-president and general manager; J. H. Neill, second vice-president; J. Tom O'Brien, treasurer; A. J. Lindsay, secretary. B. B. Pierce is plant superintendent.

Sand and Gravel Plant Design During 1929 Reflects Considerable Engineering Skill

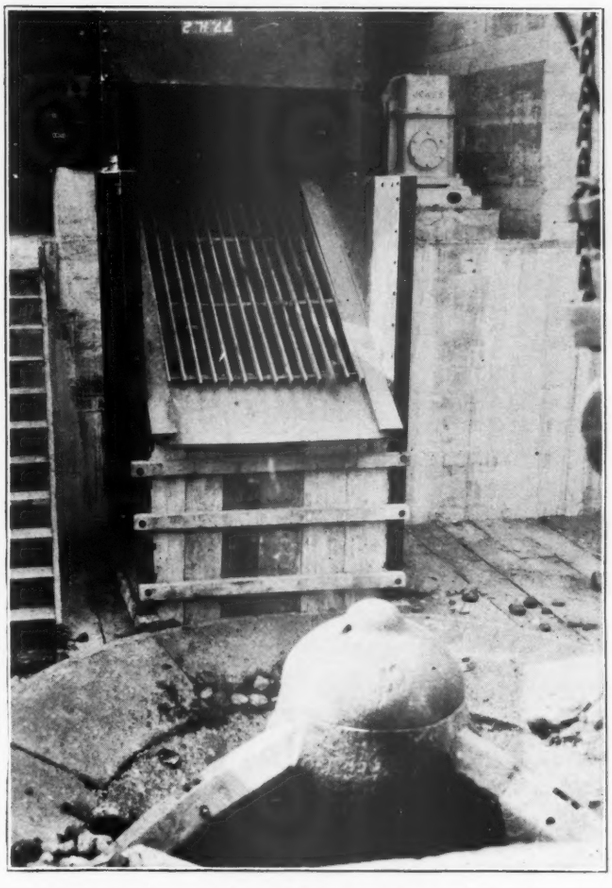
Operators Have Made Great Strides in Expansion and Efficiency To Meet the Ever Increasing Stringent Specifications.

THE year 1929 has again been one of great activity in the sand and gravel industry. There have been numerous outstanding plants constructed as well as a large number remodeled during the year. This industry has demonstrated its ability to meet the most exacting specifications and produce more and better aggregates from year to year. A few short discussions of the most outstanding developments of the year are given in these pages.

Material Service Corporation

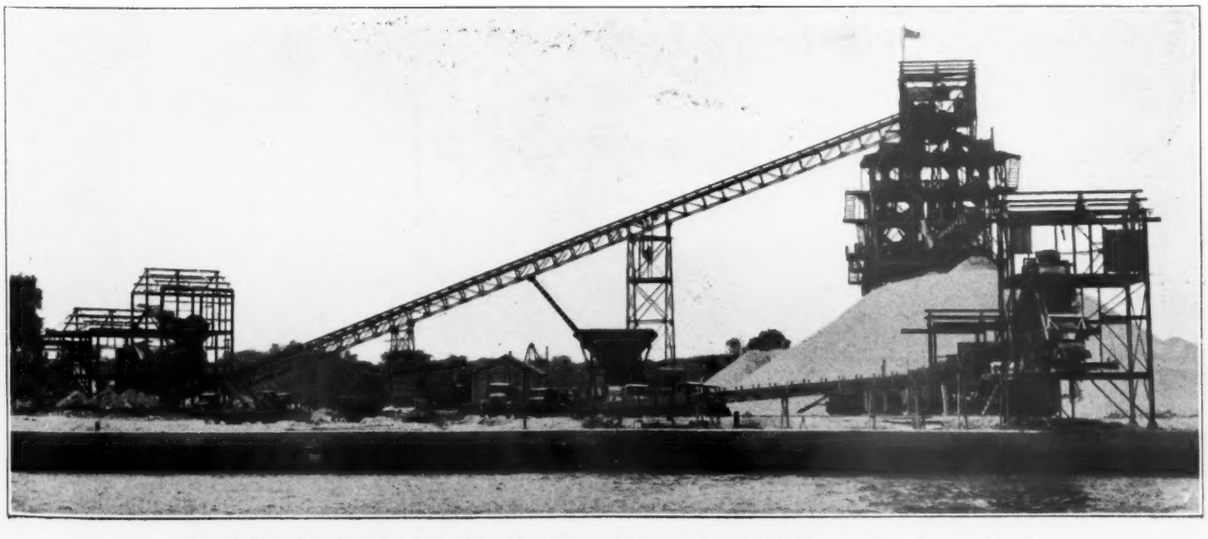
The Paul Ales plant of the Material Service Corporation at Lockport, Ill., which was completely described in the June 19 issue of PIT AND QUARRY is without question the outstanding new sand and gravel plant of 1929. The modern design of the plant, its permanent type of construction and its capacity of over 600 tons per hour alone would entitle it to this distinction. The live storage system which allows recovery of 30,000 cu. yd. of stone without rehandling is another feature few plants can duplicate.

Unusual precautions were taken to ascertain the quality and extent of the deposit before the present plant was built. No expense was spared to secure the best possible deposit and equip the plant with every known device to produce the best possible product with the greatest economy, including a latest designed self-unloading boat to move the product to the points of distribution. This boat is described in connection with the review of self-unloading boats in this issue.

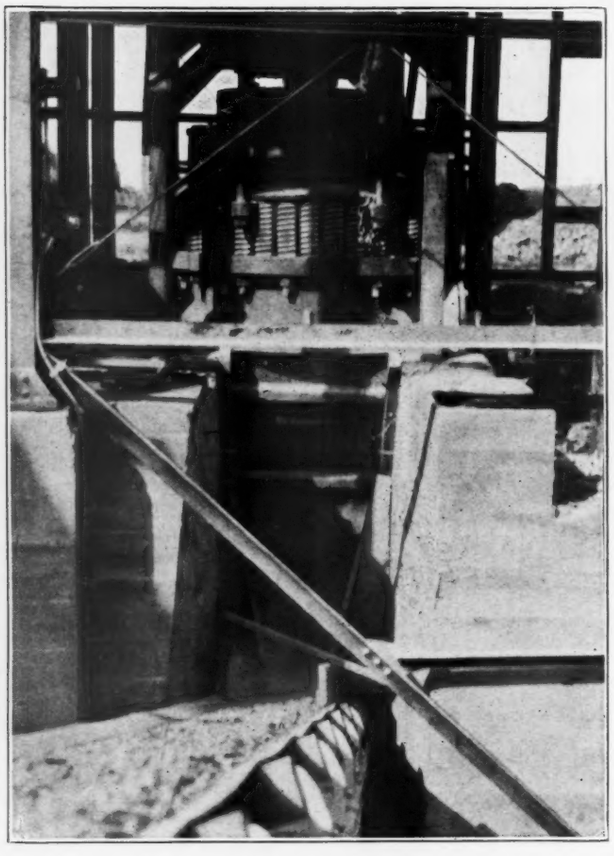


Speed reducer driven feeder and bar grizzly above primary crusher

The pit is on the west side of State Highway No. 4 between Joliet and Chicago at its intersection



Paul Ales plant of Material Service Corp. from east side of Chicago Drainage Canal



Secondary crusher discharging onto belt conveyor to transfer house

with the Lockport road. Gravel predominates in the deposit and below is a limestone of good quality which makes an ideal base for tracks and permits a large steam shovel to be used to advantage for excavating the material. The overburden is removed by a 1¼-cu. yd. Osgood gasoline dragline with a Page bucket.

A 70C caterpillar Bucyrus steam shovel with a 3-cu. yd. dipper loads into trains of four 15-cu. yd. capacity Western side-dump cars. Two of the three trains are each hauled from the pit to the plant by Davenport 25-ton steam locomotives and the third by a 38-ton Vulcan which was recently added to the equipment. The railroad, about 4,500 ft. long, consists of a single standard-gauge track with several conveniently located passing tracks. A concrete tunnel was built to permit passage of trains under the highway and two bridges with concrete piers, abutments and steel girders were built across the two branches of the Desplaines river, separating the pit and plant.

The cars discharge into a 100-cu. yd. concrete hopper where a rail grizzly with 18-in. spacing keeps out the stones too large for the primary crusher. The hopper discharges by a Stephens-Adamson pan feeder driven by a worm gear speed reducer over an inclined bar grizzly with 2-in. spacing, into the No. 10 McCully primary crusher, driven by a 125-hp. motor through a Texrope drive, The crushed material and that passing through the bar grizzly discharge onto an inclined belt conveyor in a tunnel under the crusher.

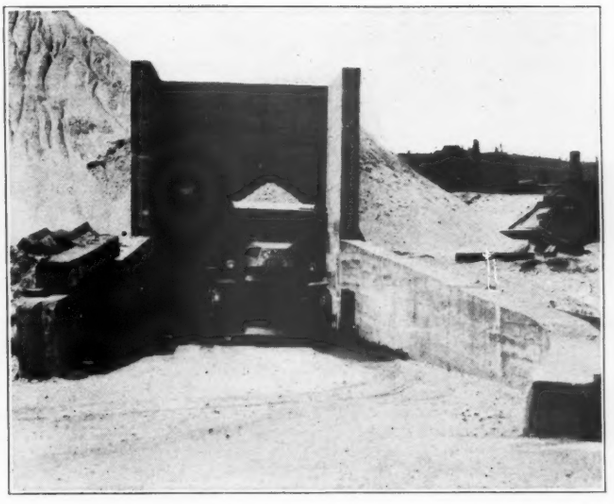
The conveyor to the secondary crushers is 42 in. wide with 206-ft. 10-in. centers, driven by a 75-hp. motor through a herringbone gear speed reducer. It discharges into a split hopper, feeding four 4-ft. by 6-ft. Gyrex vibrating screens arranged in pairs. The material passing through goes to a belt con-

Two of the three sets of revolving screens. One of sand wash boxes visible at extreme left

veyor to the screening plant; oversize goes to a steel hopper feeding a No. 4 Symons cone crusher. It discharges onto a 30-in. inclined belt conveyor on 89-ft., 9-in. centers to the transfer house. The conveyor to the screening building is 36 in. wide on 238-ft., 7-in. centers and discharges into a split hopper feeding two split chutes, feeding the material to four Gilbert screens with 1¼-in. square perforations, the oversize passing to the stockpile second from the canal as 1¼-in. to 2-in. roadstone.

A second set of four Gilbert screens with 7/16-in. wire mesh perforations receives the material passing through the first set. The oversize passes through chutes onto a 24-in. horizontal belt conveyor on 82-ft. 5-in. centers which discharges onto the first stockpile for 7/16-in. to 1¼-in. concrete stone. The material passing through goes to a third set of four similar screens with 1¼-in. wire mesh. The oversize from ¼-in. to 7/16-in. goes to the third stockpile as roofing gravel. The sand, passing through the third set of screens is chuted into four Stephens-Adamson twin screw wash boxes, where the sand is thoroughly washed and goes to the fourth stockpile. Screens and wash boxes are so arranged that either half of them may be used when desired.

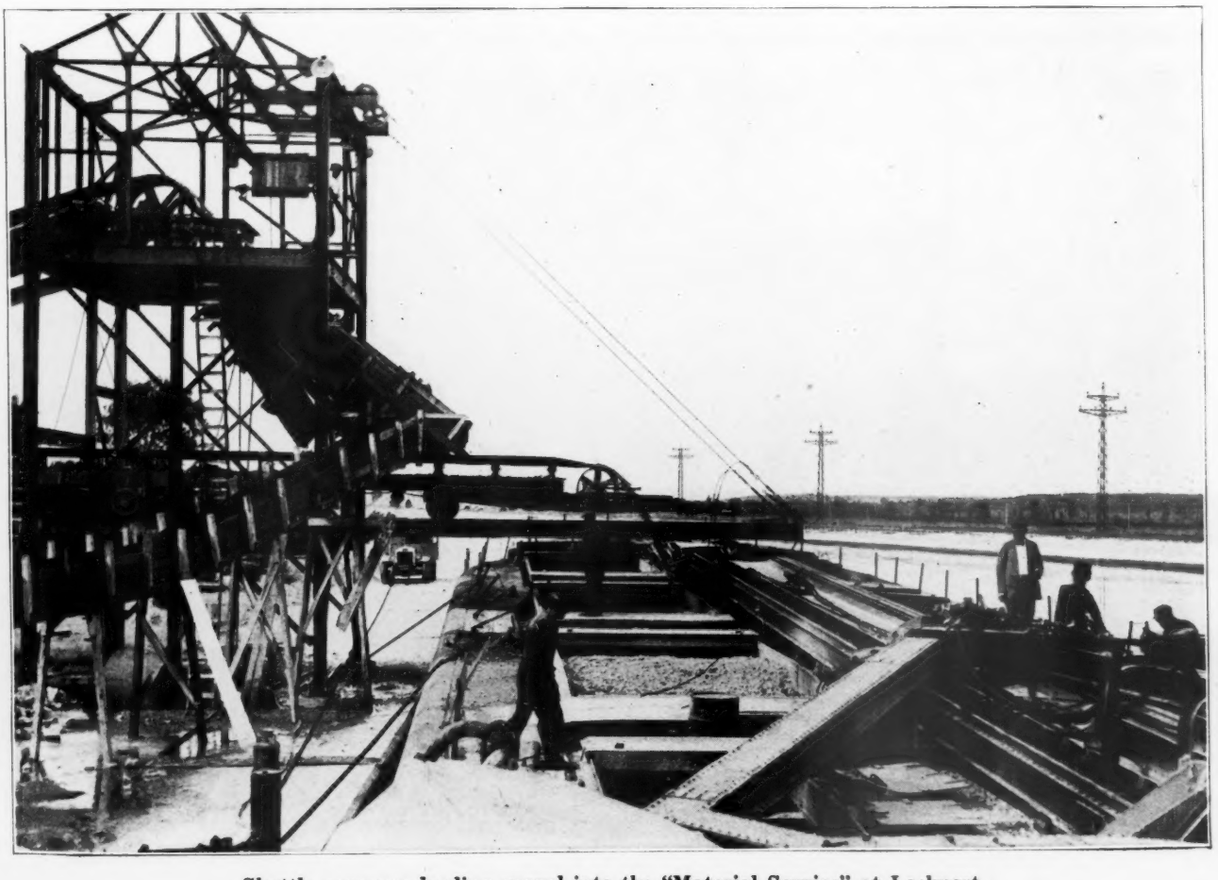
The structural steel frame of the screen building rests on four concrete partition walls which serve to separate the stockpiles. A concrete tunnel under these walls and stockpiles at right angles to the



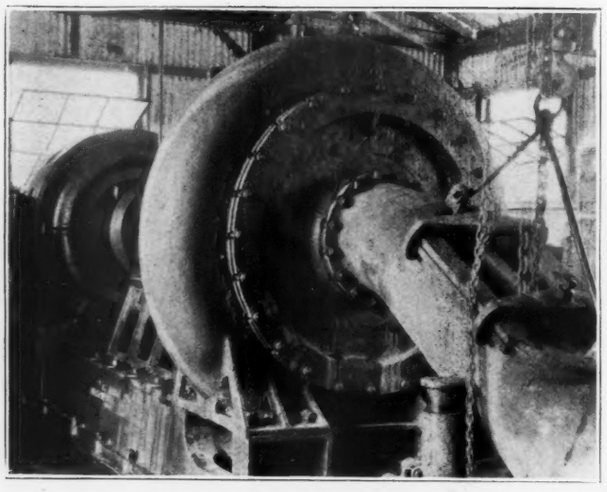
Loaded truck coming up ramp out of tunnel at south side distributing plant

dock reclaims the material in the stockpiles. Gates in the top of the tunnel allow any size or combination of sizes desired to discharge onto a 42-in. horizontal belt conveyor in the tunnel. It discharges onto a 42-in. inclined conveyor, which feeds the shuttle conveyor loading the boat. The incline conveyor discharges onto an inclined stationary screen with a 3/16-in. wire mesh where the material is given an additional rinsing by a series of jets over the screen.

Barber-Greene and Nelson stockpile loaders and



Shuttle conveyor loading gravel into the "Material Service" at Lockport



Pump and motor on dredge at Indianapolis

a Northwest crane equipped with an Owen clamshell bucket load into trucks direct from the stockpile. The crane also loads into a 35-cu. yd. Johnson bin with two compartments and two volumetric batchers for loading into concrete batcher trucks.

All of the concrete work at the plant was designed by the Maritime Engineering Corporation. The structural steel buildings and machinery layout were designed by Stephens-Adamson who furnished all rotary screens, sand boxes feeders and conveyor rollers. The two long inclined conveyors and the weighing conveyor have Stephens-Adamson gravity take-ups. Ajax Hewitt gutta-percha conveyor belting and Jones speed reducers are used throughout the plant. The concrete construction, steel erection, machinery installation and railroad work were under the supervision of Paul Ales, general manager and directed the work assisted by F. W. Herkel, superintendent of the plant.

American Aggregates Corporation

The American Aggregates Corporation, of Greenville, O., has the distinction of having put into operation three new and thoroughly modern plants in 1929. Two of these plants, one at Miamiville, O., and the other at Indianapolis, Ind., were described in the July 17 issue of PIT AND QUARRY. These gravel washing, crushing and screening plants are of the most modern design and use the most efficient type of equipment.

These plants are of similar design and construction, excepting at that Indianapolis, gravel is excavated by a dredge, while at Miamiville the aggregates are recovered with steam shovels and cars. Both plants haul material to the screening building with balanced skip hoists and concrete and steel are used almost exclusively in the construction of both plants with the exception that the Indianapolis plant has bins of creosoted timber with a structural steel frame, while the Miamiville plant has concrete bins. These plants are ideally located for shipping by either truck or rail.

Both plants were designed by the engineering department of the American Aggregates Corporation and erected by its construction engineers. The Indianapolis plant was constructed under the direct supervision of G. D. Scheuneman, while the construction of the plant at Miamiville was in charge

Another view of Indianapolis plant of American Aggregate Corp. with dredge in foreground

of W. R. Purcell of the Cincinnati office. Practically all of the equipment, including screens, elevators, conveyors, sand boxes, skip hoists, skip cars, dredge hoist and driving machinery was manufactured in the Greenville Manufacturing Works.

Officers of the American Aggregates Corporation are: F. D. Coppock, president; C. E. Patty, vice-president and general manager; Jos. F. Coppock, assistant general manager in charge of operations; and J. C. Patty, chief engineer. Chesleigh Gray is district manager for the Cincinnati area and E. C. White is manager of the Miamiville plant.

The Indianapolis Plant

The Indianapolis plant is located on Raymond Street, west of the White river about two miles southwest of the center of the city. The 400 acres of level land contains a deposit of 55 ft. in thickness, covered by approximately 4 ft. of overburden.

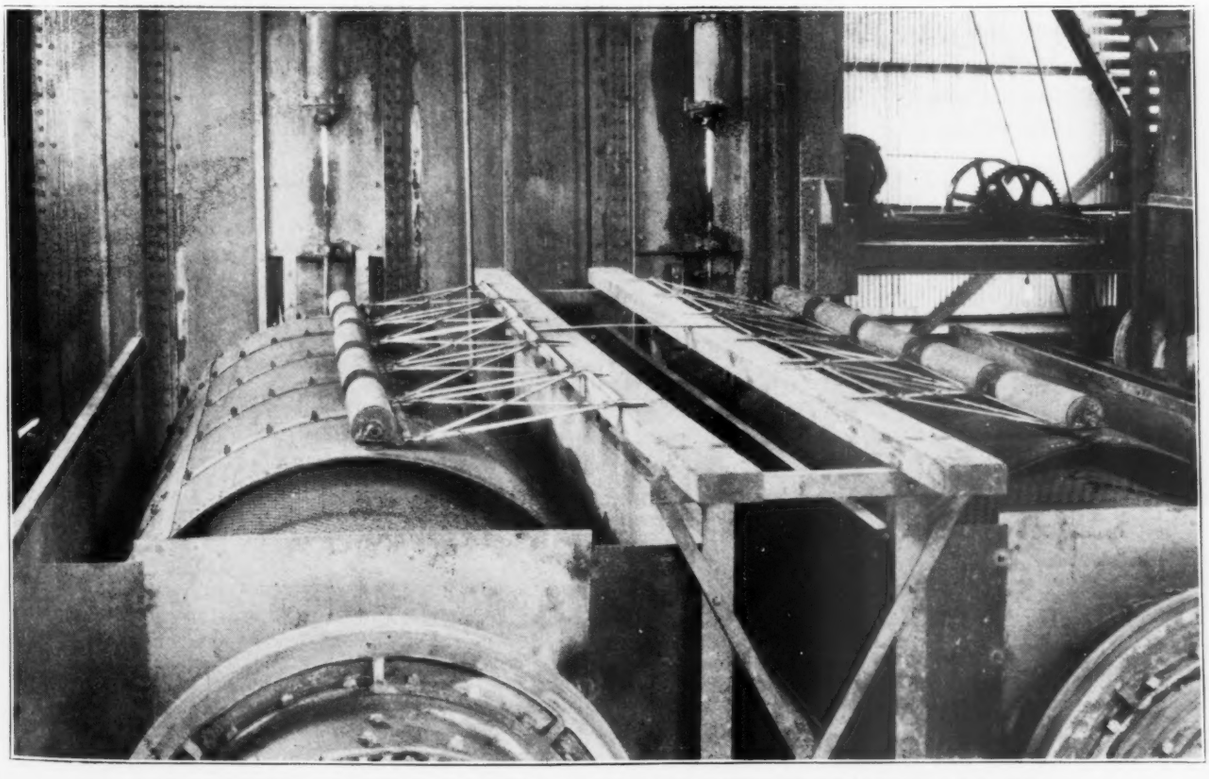
The plant, which has a daily capacity of 5,000 tons, has concrete foundations and a structural steel framework, covered with corrugated metal. Construction was begun on October 8, 1928, and the plant was completed April 1, 1929. It is so designed and constructed that the production may be readily increased by the installation of additional equipment. A profitable feature of this plant is a 4-track railroad bridge over West Raymond Street, which connects the plant to the Indianapolis Union railway.

A Bucyrus Class 24 steam dragline excavator, mounted on rails, handles a 4-cu.yd. Greenville drag bucket which has a slotted back-plate for draining out the water. The overburden is used in levee improvement and other work.

Skip hoist at Indianapolis plant

The 84-ft. by 26-ft. dredge hull is of steel plate and has a well 12 ft. wide and 28 ft. long for a ladder. The structural steel superstructure has corrugated metal siding and roofing. The 65-ft. nozzle ladder is supported by a 52-ft. A-frame. The rotary cutter head is driven from the upper end of the ladder by a 30-hp. electric motor through four sets of reduction gears.

A 5-drum Greenville hoist, driven by a 30-hp. motor, operates the two swing lines, the two shore lines and the ladder. The 15-in. Type H, Form 44



The two gravel screens at Indianapolis. Steel bin in background with air operated gates

Dragline stripping overburden at Indianapolis plant. Note slotted backplate on drag bucket

Amsco centrifugal dredge pump with right drive and bottom discharge is driven by 4,100 volt, 400-hp. variable speed a.c. motor. Water for priming, sealing and cooling is furnished by a 4-in. centrifugal pump.

The pump discharges through a 16-in. pipe line with Leschen flat-strand tension cable, supported on Greenville steel pontoons, discharges into a steel feed hopper supported on the concrete bin and pit feeding the skip hoist. The balanced skip with two 5-cu.yd. cars is operated by a Greenville single-drum hoist, driven by a 150-hp. motor. The incline which is 175 ft. long, sloping 40 deg., is of structural steel construction supported by five bents on concrete foundations.

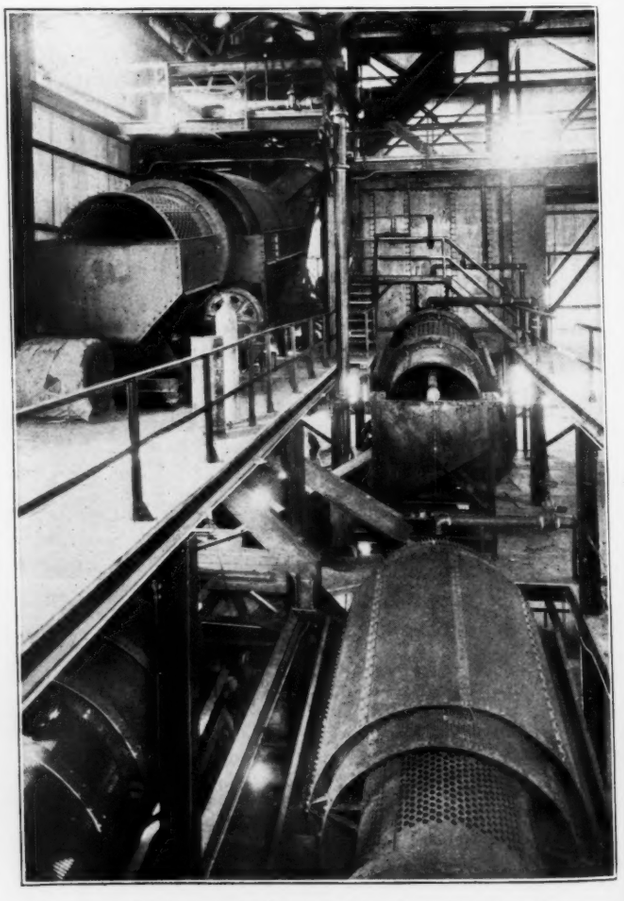
Skip cars discharge into a 50-ton steel hopper which feeds through two sliding gates operated by a Curtiss air hoist into the two revolving screens. Each of these screens has a 4-ft. by 25-ft. main jacket with 1½-in. round perforations. An inner jacket, 5 ft. 6 in. in diameter by 13 ft. 6 in. long, with ¾-in. perforations and an outer jacket 6 ft. 6 in. in diameter by 12 ft. 6 in. long with ¼-in. by ¾-in. slots. A 5-ft. overhang on the main barrel has 1¾-in. perforations. Each of these screens is driven through a Texrope and double gear reduction drive by a 25-hp. motor. The ¾-in. to 1½-in. sizes can be chuted to any of the gravel bins. The ¼-in. to ¾-in. sizes can be diverted to two double-deck screens, one of which is a Hum-mer and the other a Simplicity screen.

Sizes over 1¾ in. go through a chute to any of three crushers, a Symons 36-in. disc, No. 4 Gates, and a No. 5 McCully, located on the ground floor of the building. Crushers discharge into a Greenville 18-in. bucket, 66-ft. center elevator, driven through a Texrope and double gear reduction drive by a 25-hp. motor. The stone screen is similar to the gravel screens, except it has 1¼-in. perforations in the barrel and ¼-in. round perforations in the outer jacket and discharges into the same bins as the gravel screens.

Under ¼-in. sizes pass from the gravel screens to two double-jacketed sand screens. Each has a 4-ft. by 18-ft. barrel with 3/16-in. mesh wire cloth, an inner jacket 5 ft. by 12 ft. with ⅜-in. perforations and a 5-ft. 10-in. by 11-ft. 8-in. outer jacket with 1/12-in. mesh. Trunnions, bearings, drives and other parts of the fine screens, including the inner barrels of the gravel screens, are interchangeable. Sand from the screens passes to two Greenville sand boxes where the sands are separated. Waste water is flumed to either of the two ponds. Water for washing is provided by two Allis-Chalmers 8-in. Type SF centrifugal pumps.

The Miamiville Plant

The plant at Miamiville is approximately 16 miles from Cincinnati on the Little Miami river. The property consists of about 85 acres of which



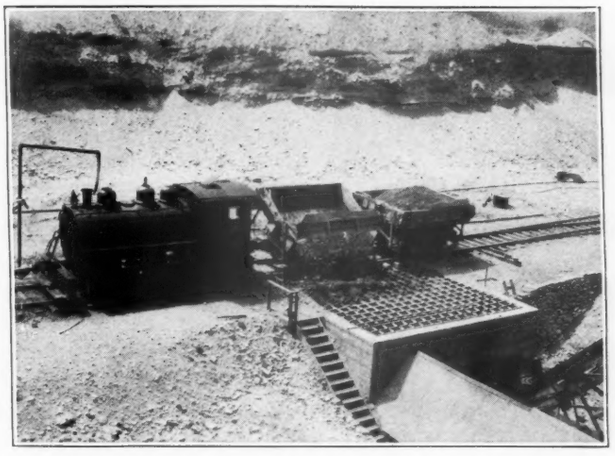
Screening floor at Miamiville plant of American Aggregates Corp.

75 acres can be excavated by either steam shovel or dragline. The deposit is about 60 ft. deep with 18 ft. below the water level. About 50 per cent of the gravel is over 2½-in. size and must be crushed.

Overburden, which averages about 3 ft., is removed by a 1¼-yd. Erie caterpillar steam shovel and hauled in 6-cu. yd. dump cars by a 25-ton steam locomotive to a spoil dump. A Marion 37 revolving steam shovel with a 1¼-cu. yd. dipper and caterpillar treads is used in the pit. It loads into a train of two 6-cu. yd. side-dump cars which are hauled to the plant by a Davenport 25-ton saddle tank locomotive. Two trains are necessary when the stripping equipment is moved into the pit.

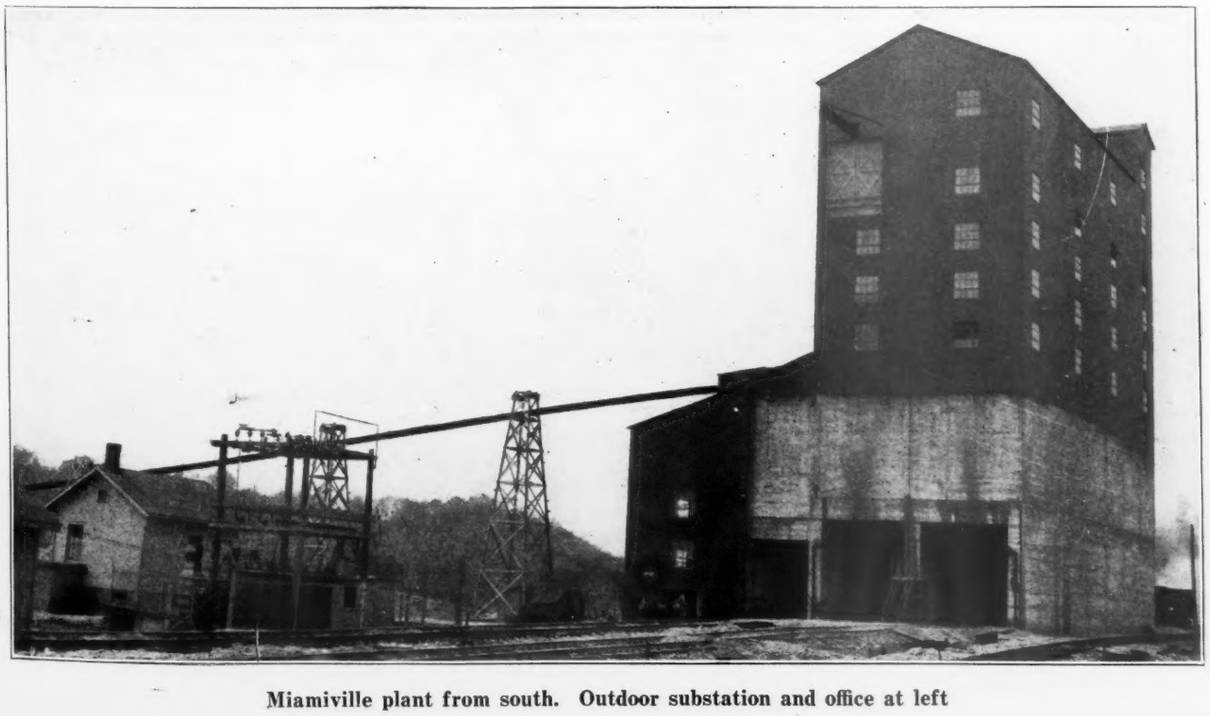
The cars are dumped into a 60-cu. yd. concrete hopper, equipped with an 11-in. by 11-in. rail grizzly to reject all stone too large to be crushed. Material is fed through two Curtis air-hoist-operated gates into 5-ton cars on a balanced skip, which is operated by a fixed single drum hoist driven by a 175-hp. electric motor. The double-tracked skipway, which is of structural steel construction and 227 ft. long with a slope of 45 deg., was furnished by the Webster Manufacturing Company.

The skip cars dump into a 60-cu. yd. steel hopper at the top of the plant and material is fed by gravity through a Curtis air-hoist-operated gate to the primary screen. This screen is 16 ft. long by 5 ft. in diameter and has 4-in. round perforations. Oversize goes through a chute into storage bins over the crushers and the material passing through the primary screen passes to a double-jacketed gravel screen 5 ft. in diameter with 12 ft. of 1¾-in. perforations and 3½ ft. of overhang with 3-in. perforations. The first jacket is 11 ft. long and 7 ft. in diameter with ⅝-in perforations; the second is 9 ft. long and 9 ft. in diameter with ¼-in. perforations. The following sizes are produced: ¼-in. down, ¼-in. to ⅝-in., ⅝-in. to 1¾-in. and the oversize 1¾-in. to 4-in., which goes to another crusher feed bin. The various sizes can be combined by turning the flap gate in the hopper. The sizes passing the 3-in. screen can be added to the 1¾-in. down or mixed with the oversize as desired. Material from ¼-in. down goes to a chute with a perforated plate in the bottom, that which passes through being fine sand and that passing over being coarse sand. Each of these sizes passes to a Webster sand drag tank where the sand is drained by inclined-flight conveyor and chuted direct to the storage bins.

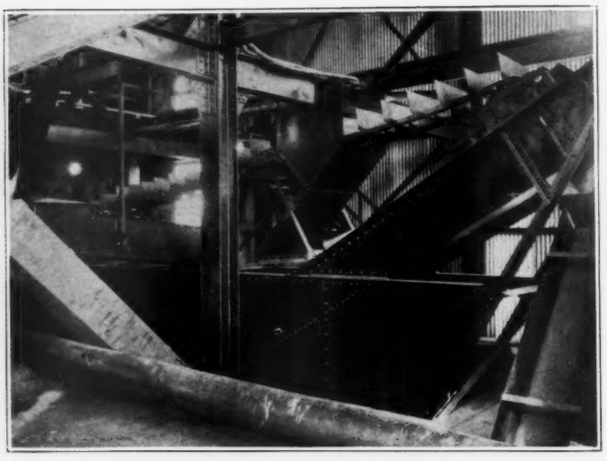


Cars of gravel being discharged into skip feed hopper

Each of the two crusher storage bins has vertical sliding gates, operated by Curtis air hoists. Sizes from 4-in. up which are in the northern bin



Miamiville plant from south. Outdoor substation and office at left



One of sand drag boxes at Miamiville plant

feed to a 16-in. Superior McCully crusher which reduces to 3-in. and under. The 1¾-in. to 4-in. feeds to a 48-in. Symons cone crusher which crushes to 2-in. and under. Each crusher, which rests on concrete bases protruding through the second floor of the building, is driven by a 75-hp. motor through a Texrope drive. The crushers discharge onto a 36-in. Webster belt conveyor on 65-ft., 6-in. centers, driven by a 5-hp. motor through a speed reducer, and the crushed stone is carried to a Greenville bucket elevator This is a double unit, the first discharging into the second and the second to the screens. Elevators have 69-ft. and 43-ft., 6-in. centers respectively and each are driven through a Texrope and double-gear reduction drive. The second elevator discharges into the 60-in. by 22-ft. stone screen which has 12 ft. of 1½-in. perforations. It is double-jacketed, the first jacket being 11 ft. long by 7 ft. with ⅞-in. perforations and the outer jacket 9 ft. long by 8 ft. with ⅜-in. perforations. The sizes made are 2-in., 1-in., ¾-in., and dust. These go direct to the storage bins and the rejects return by a chute to the 1¼-in. to 4-in. bin for recrushing.

The main plant building is divided into four parts. There are two rows of seven 150-cu. yd. concrete storage bins, with a track running under each row for loading into railroad cars. Steel chutes are so arranged that any size of material can be stored in any bin, except the first two to the south in each row, which are used for sand. The bins serve as a foundation for the main screen house and the tower, which have a structural steel frame and corrugated galvanized iron siding and roofing. The tower houses the discharge ends of the skip hoist and the main stone elevator from the crushers.

Most of the output of the plant is shipped to Cincinnati and vicinity, the sand and gravel to retail yards and the crushed stone to road construction. Most of the road stone is shipped by truck and the sand and gravel by rail. A gravity feed car storage track serves both tracks under the bins. Rail shipments are made over the Cincinnati and Springfield branch of the P. R. R.

Le Grand Sand and Gravel Plant

The Le Grand Limestone Company of 29 South La Salle Street, Chicago, began the operation of a well-designed sand and gravel plant about two miles south of Lake View, Ia., on the Chicago and Northwestern railway on July 8, 1929. The wood frame structure on concrete foundations was designed by Link-Belt engineers and the equipment was mostly manufactured and installed by the Link-Belt Company. The plant has a daily capacity of 30 cars of washed and graded material.

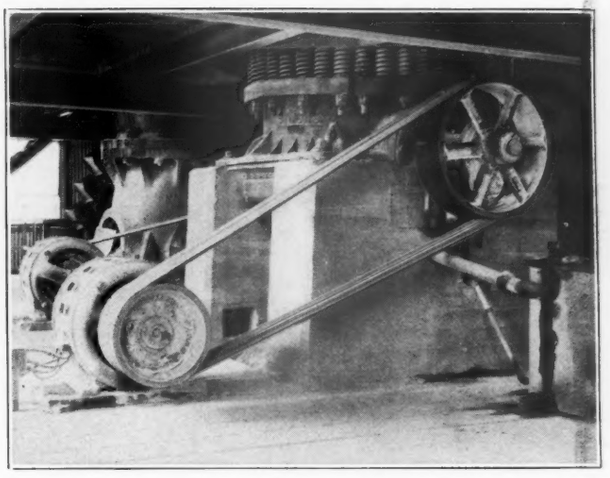
Dragline loading into track hopper at LeGrand plant

The property, which consists of about 110 acres, is almost perfectly flat and has from 2 ft. to 3 ft. of overburden. The deposit varies in depth from an average of 15 ft. to about 28 ft. and runs from 35 to 40 per cent gravel of which about 5 per cent requires crushing.

A Link-Belt K55 gasoline crawler dragline with a 1¾-cu. yd. Page bucket strips the overburden and excavates the deposit. This machine has cut to a depth of 28 ft. below the water level while setting on ground 7 ft. above water level. Material is loaded into a 23-cu. yd. Iowa portable steel bin which straddles the track leading to the plant. It passes through to load a train of two 5-cu. yd. Western side-dump cars which is hauled by a Whitcomb 8-ton gasoline locomotive to the plant. A similar locomotive is held to use as distance increases between the pit and plant.

Cars are discharged through an 8-in. rail grizzly into a concrete hopper from which a 30-in. Link-Belt apron feeder regulates the flow of material onto the conveyor to the plant. It discharges into two sets of Link-Belt Dull conical screens, driven by chain and gear from the same moter that operates the main belt conveyor. The first pair has 2½-in. and the second pair has ¾-in. perforations. The ¾-in. to 2½-in. material goes direct to a bin and the mixed material including a gradation of sizes passes to a bin.

The material passing through the conical screens passes to a Link-Belt vibrating screen with ⅜-in. mesh on upper deck and ¼-in. on the lower. It is belt-driven by a 3-hp. Howell motor. The sand goes through a steel flume to two Link-Belt Shaw classifiers, one of these, a 30-in., discharges to the mixed bin, and the 20-in. into the sand bin.



The two crushers in the Miamiville plant. Stone elevator in left background

Aggregates over 2½-in. pass through a chute to a steel-lined crusher-hopper which feeds a No. 5 Austin gyratory crusher. The crusher is driven by a 30-hp. Howell motor and discharges onto a 20-in. with 95-ft. centers return conveyor on Link-Belt rollers with Alemite fittings. The conveyor discharges into a chute and the aggregate passes onto the main conveyor to return for resizing.

Water for plant operations is furnished by an Allis-Chalmers centrifugal pump driven by a 60-hp. Allis-Chalmers motor and Fairbanks-Morse centrifugal pump driven by a Fairbanks-Morse 25-hp. motor, both pumping from a nearby pit. Each of these pumps has an individual house and Iowa gate valves are used exclusively. Connection with the plant is through 8-in. and 5-in. pipe lines respectively.

Two Eagle gravel washers, each driven through

LeGrand plant from southwest, pump-house in foreground

Dumping carloads over grizzly into hopper at LeGrand plant

a belt by a 7½-hp. motor do all the work of cleaning which was formerly done by hand-picking. Cars on a siding are loaded through three Link-Belt segmental type gates, two for gravel and one for sand. These gates are spring-seated, 18-in. by 18-in., and three similar gates are used for truck loading.

Van Camp Sand and Gravel Company

A well-designed sand and gravel plant with a 300-ton per hour capacity was put into operation late in the summer by the Van Camp Sand and Gravel Company of Cincinnati, O. The plant is located between Morrow and South Lebanon, in Warren County, on the main line of the Pennsylvania railroad and along the Little Miami river, or about 29 miles from Cincinnati. B. T. Van Camp is president of the company, John Sloan, vice-president; John B. Campbell is secretary-treasurer; and John H. Liggett, Alfred A. Anderson and Philip Geier are directors.

When plans were definitely made, an order was placed with the Smith Engineering Works for all of the feeders, conveyors, crushers, washing screens, sand tanks, and bin-gates, to handle a capacity of 3,000 tons per ten-hour day. The Gifford Wood Construction Company was awarded the contract for the concrete silo bins and the Dayton Structural Steel Company furnished the steel work. The entire plant is of concrete and steel construction.

The property consists of 180 acres of a high grade deposit at least 60 ft. in thickness, which is being worked down to the water-line against the bank with a 25-ft. face. A 2-cu. yd. Marion steam shovel excavates and loads the material into 20-cu. yd. two-way Koppel air-dump cars. These are taken by a Vulcan 26-ton locomotive and dumped into a 100-ton concrete and steel receiving hopper.

Two Telsmith 30-in. by 5-ft. 6-in. self-contained Timken bearing plate feeders, driven by separate motors, receive the steady flow of material from the hopper and feed to a 36-in. by 160-ft. main plant conveyor which delivers the pit-run to a 4-ft. by 12-ft. Telsmith grizzly with 3-in. openings. That which passes through the grizzly drops directly to a 36-in. by 300-ft. belt conveyor which delivers to the top of the plant, while the oversize goes to a No. 13-A Telsmith primary breaker. This discharges on the main conveyor and is taken to a Hercules scalping screen, 72 in. in diameter by 23 ft. long with 2¼-in. round perforations and equipped with Timken bearings. Material passing through goes to a 60-in. diameter by 24-ft. long Hercules washing screen, where three sizes of gravel are separated and pass to their respective concrete bins.

Oversize from the scalping screen is chuted to a No. 52 Telsmith reduction crusher, and oversize from the washing screen is chuted to a 3-ft. Symons cone crusher. Both crushers discharge on a belt conveyor which delivers to a second 60-in. by 24-ft. Hercules stone screen which separates three sizes of crushed gravel, the oversize being returned to the cone crusher. Stone dust and water are flumed to a sand-settling tank and then pass over a Telsmith 3-ft. by 6-ft. vibrating screen to dewater, separate and chute the dust to the fine sand bin.

Sand and water from the washing is flumed to two Jeffrey 42-in. sand drags which discharge to

Discharge from one of the sand separators at LeGrand plant

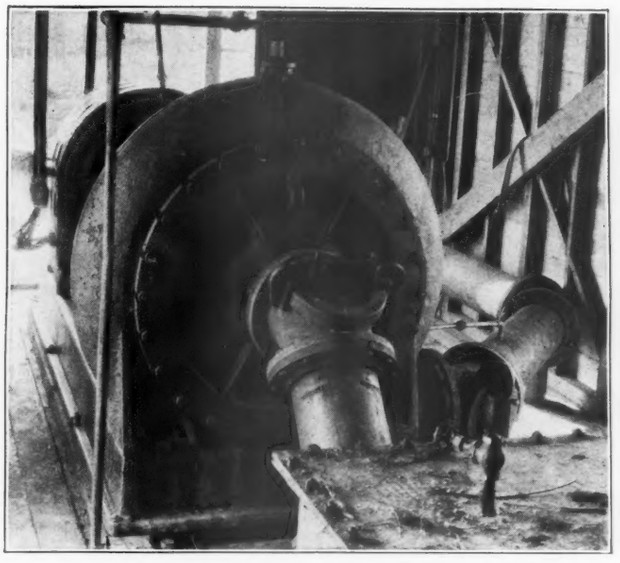
two 3-ft. by 6-ft. Telsmith vibrating screens which separate the sand into coarse and medium grades and pass to their respective bins. Overflow from drags is flumed to three Telsmith No. 8 automatic sand-settling tanks for recovering the fine sand.

All crushers and main belt conveyors are equipped with Texrope drives and all screens have silent chain drives. A Link-Belt crane is used for reclaiming material from stockpiles. Johnson batchers have been installed for correctly measuring trucks loads, and truck scales are used for weighing out materials.

Dent and Kent

The new plant of Dent and Kent, Inc., at Rockville Center, L. I., is a splendid example of the modern trend in sand and gravel plant design. Although only a small plant, with a capacity of 1,000 cu.yd. per day, it must be rated as one of the outstanding plants of the year because of its simple and efficient design and the permanent type of construction employed. This plant went into operation on August 1, and a complete description of it was published in the November 6 issue of PIT AND QUARRY.

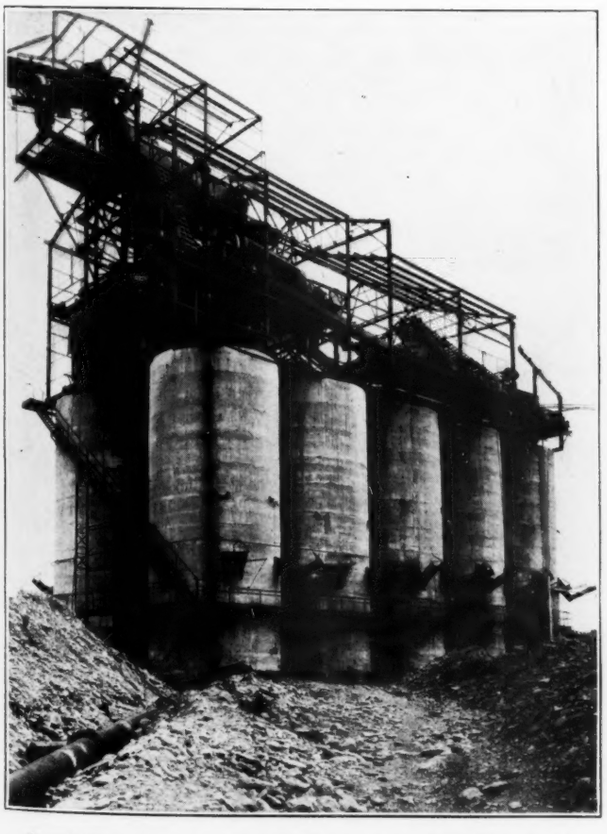
The gravel is recovered by a dredge which was built at the same time as the plant. It is 70 ft. long by 34 ft. wide and is controlled by four shore lines operated by a 5-drum National hoist which also raises and lowers the intake boom. The Hetherington and Berner 12-in. centrifugal pump is driven by a 300-hp. motor. A steel box with a screen intercepts all dirt and large stone before it gets to the pump.



Dredge pump with stone-box in foreground on Dent and Kent dredge

The plant is of structural steel construction with steel bins, concrete foundations and driveway. The dredge line discharges onto a 1½-in. bar grizzly, the oversize going to a 2⅛-in. rotary grizzly. The oversize here goes to a waste pile. The material passing through the grizzlies goes to a 60-in. by 24-ft. Haiss revolving screen with an 8-ft. scrubbing section and a sand jacket. The gravel goes to a Jeffrey gravel washer which discharges to one of the five 200-cu.yd. capacity bins. The sand goes to a series of six 8-ft. Allen sand cones, two of which produce coarse sand and four plastering sand. A smaller 72-cu.yd. bin alongside the plant structure is used for oversize for which there is some demand. Deliveries are made by five General Motors 5-ton trucks owned by the company.

The steel bins were furnished by the Butler Bin Company. Roebling cable, Republic dredge sleeves, Crouse-Hinds conduit, Goodrich suction hose, and Square D switches are used. Wm. Bonner is president of the company and Richard L. Bonner is secretary and treasurer.

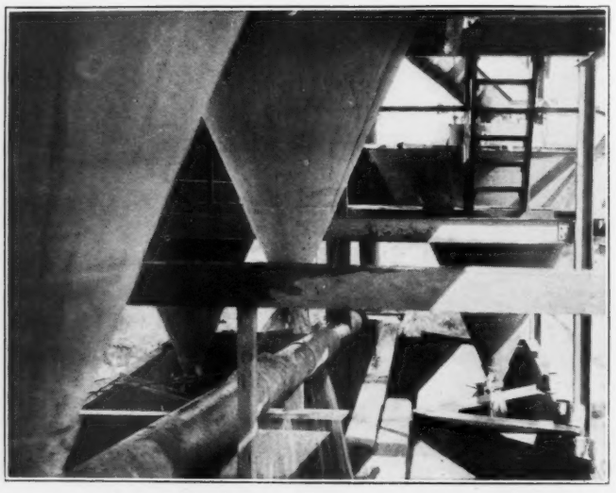


Crushing and screening building above the silos at the Van Camp plant

Fort Worth Sand and Gravel Company

The new plant of the Fort Worth Sand and Gravel Company, Inc., is located on its own railroad 8½ mi. east of Fort Worth, Tex. The general design of the plant follows usual practice, but some special features have been added which appear to make it different from any plant in existence.

One problem was to provide storage for the sizes which do not have an immediate market without loading them into cars, unloading into storage piles and then reloading when a market is secured. Another was to provide means for grading to meet



A few of the six sand cones in the new Dent and Kent plant

the ever-changing demands of various purchasers, which required a system by which each car could be loaded with a different grading without increasing the cost of production. A short synopsis of how these problems were met is given in this review, but a complete description of the plant will be published in an early issue of PIT AND QUARRY.

The illustration shows that the plant is built in three sections. On the right is the first section which carries the pit-run directly away from the railroad track a distance of 215 ft. While passing over this section it is scrubbed and divided into ⅛-in. and over ⅛-in. Under ⅛-in. is further washed and both grades are dewatered and pass onto the conveyor belts to the second section.

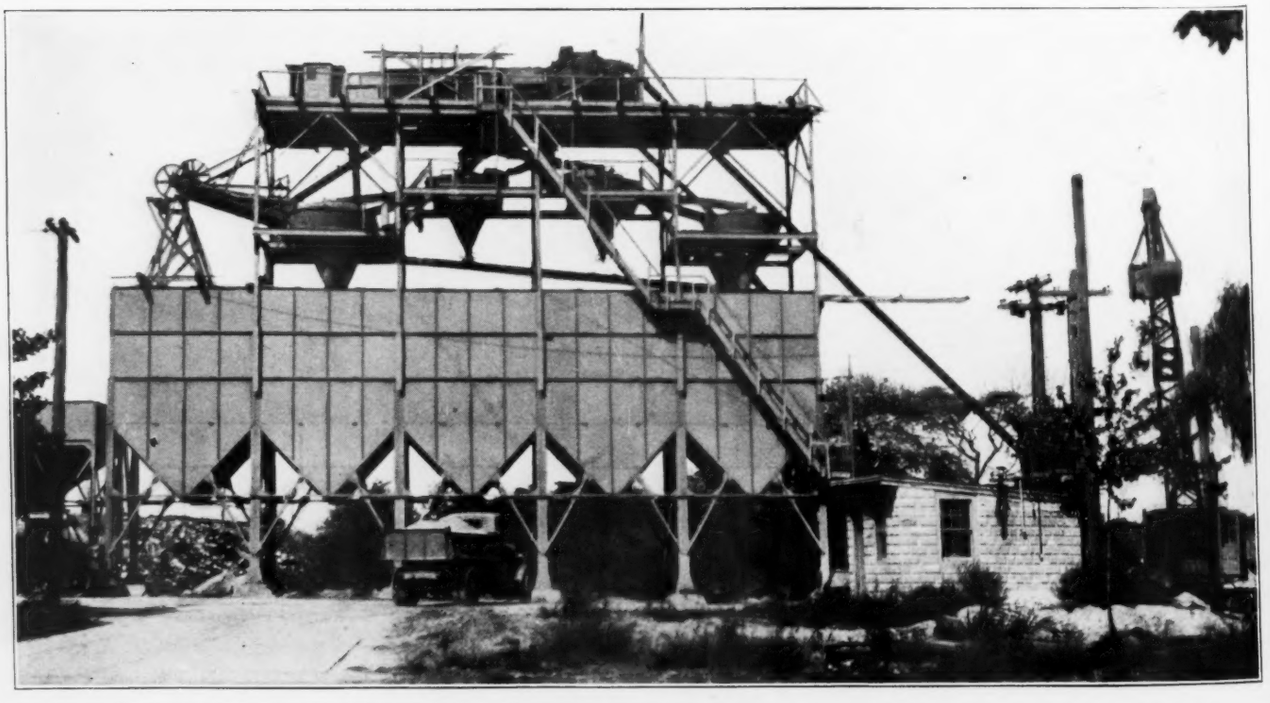
The second section, in the center of the illustration, is principally of steel construction and is known as the screening and storage section, which has a height of 64 ft. and runs parallel to the railroad a distance of 215 ft. and totals 750 ft. in length. This section is equipped with Leahy No-Blind vibrating screens and belt conveyors to carry the material that passes through the screens to screens of small mesh. Under this structure are the storage piles of material which have passed over the screen and have been dropped in their proper places, according to size. A tunnel conveyor system loads the material into cars.

The responsibility for originating this plan of design is credited to R. M. Quigley, while W. W. Hyde worked out all the details and personally supervised the construction of every part, including the placing of all equipment. Officers of the Fort Worth Sand and Gravel Company, Inc., are H. P. Bonner, president; J. O. Hart, vice-president; R. M. Quigley, treasurer; and T. E. Popplewell, secretary.

Beyrer Bros. Sand and Gravel Company

The new plant of the Beyrer Sand and Gravel Company at Fifth and Wenger Streets, Mishawaka, Ind., consists of 35 acres one mile southeast of the center of the city. This review will indicate some of the features of the plant but a complete description will be published in an early issue of PIT AND QUARRY.

A Sauerman slackline cableway excavator of 700-ft. span with a 1¼-cu. yd. Universal bucket is used to excavate the deposit from 40 ft. to 45 ft. in thickness, the 1½-ft. of overburden being



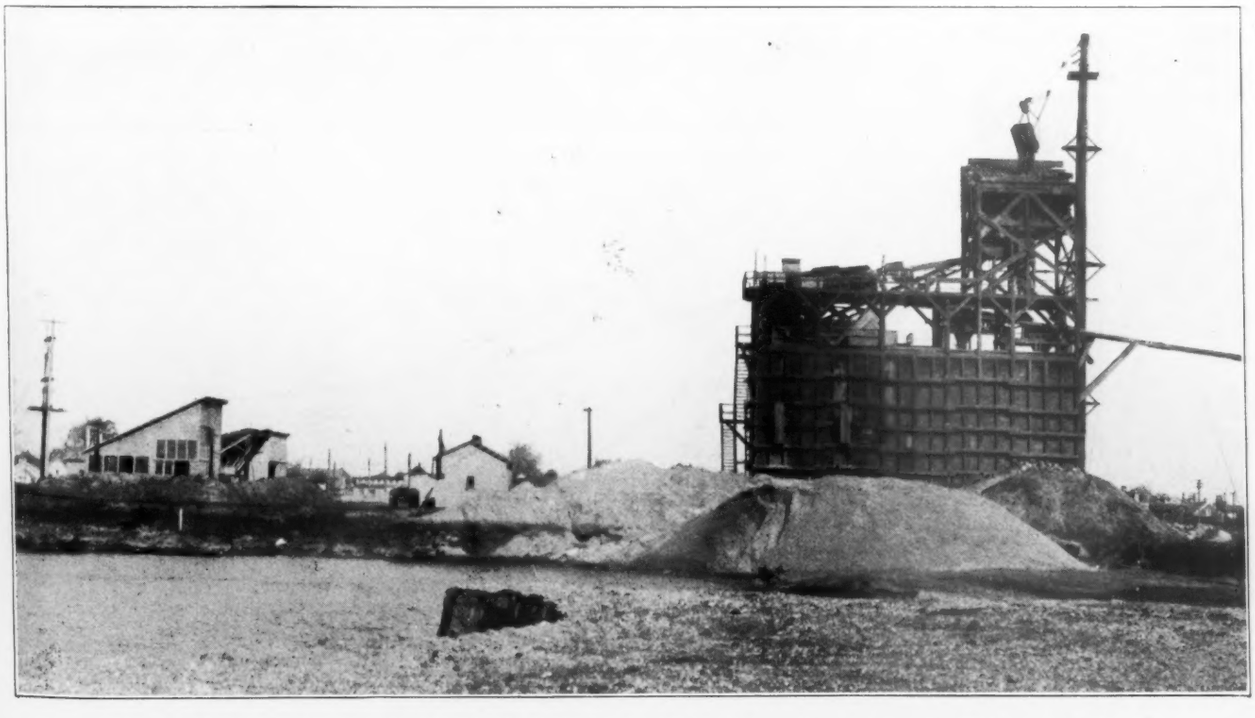
New Dent and Kent plant from south. Note compact design, which eliminates unnecessary rehandling of material. Small batcher bin at left. Crane which does stripping at right

General view of new Fort Worth sand and gravel plant which clearly illustrates the unusual method of screening and stockpiling employed

removed by a General gasoline crawler crane with a ½-cu. yd. Owen bucket. A sloping rail grizzly, spaced at 6-in. at the top of the plant, receives the material and the stone passing through drops into a hopper, and into a wash box with a 3-in. water jet. It is discharged through a 20-ft. sluiceway into the Telsmith 40-in. by 18-ft. heavy duty sizing screen where another 3-in. water jet is used. The screen has 2¼-in., 1½-in., and ⅝-in. holes on the main barrel and a 6-ft. sand jacket with ¼-in. slots.

From the sizing screen, the 2¼-in. to 6-in. oversize passes to a gyratory crusher. which discharges onto a 16-in. belt conveyor which discharges the crushed gravel into the wash box for rescreening. The 2¼-in., 1½-in. roofing gravel and pea gravel all pass through chutes directly to their respective bins. The fine material passes over an inclined stationary screen with ⅛-in. mesh to separate the two sizes of sand which pass to two Telsmith No. 7 settling tanks.

The main plant structure and the five 200-cu. yd. capacity bins are of double creosoted timber construction. The bins discharge through side-discharge drop chutes into trucks on a concrete roadway. J. R. and J. L. Beyrer operate the plant.



General view of Beyrer sand and gravel plant showing bucket dumping to hopper. Hoist house at left

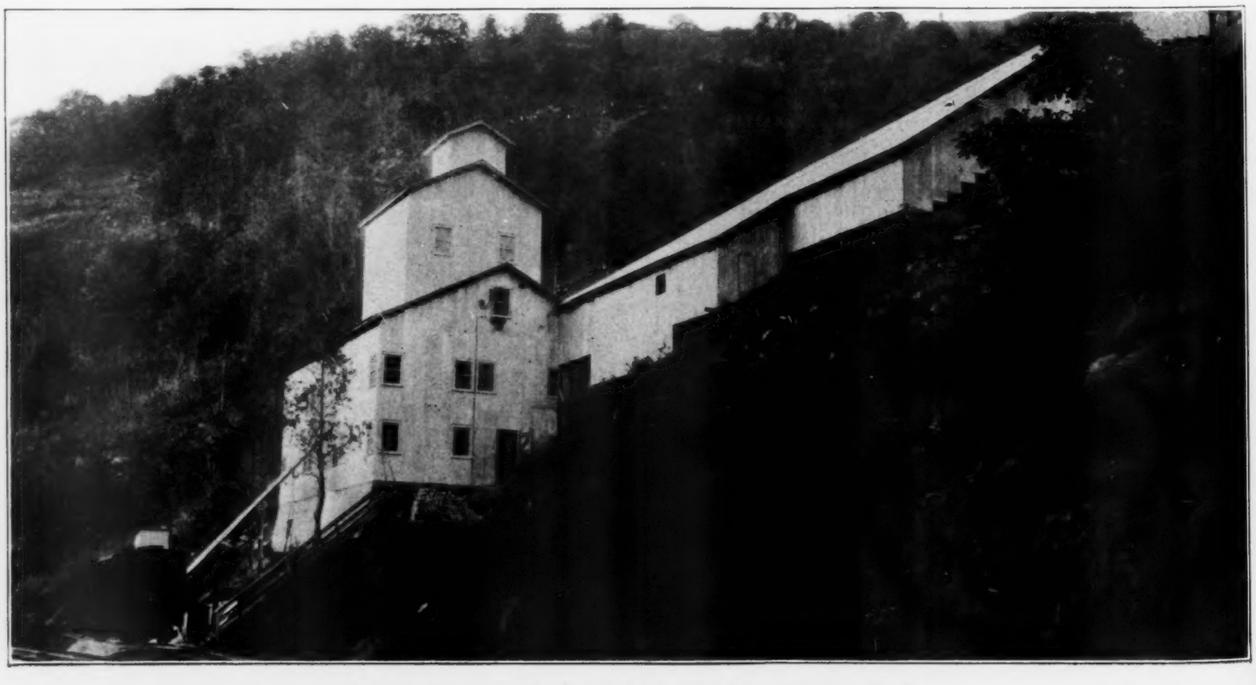
Two New Plants Constructed by Southern Feldspar Industry During 1929

THE feldspar industry in the South has just passed through one of the most active years in its history, especially in the construction field. Perhaps the most important development was the completion of the modern grinding plant of the Feldspar Milling Company at Bowditch, near Micaville, N. C., erection having been started in 1928. A second event of importance was the erection at Toecane, N. C., of the new plant of Southern Feldspar, Inc., a subsidiary of the Golding-Keene Company, of Keene, N. H. One of the industry's oldest producers, the Erwin Feldspar Company, Inc., of Erwin, Tenn., now a division of the Consolidated Feldspar Corporation, Trenton, N. J., this past summer started extensive enlargements which are still in progress, to its main plant at Erwin. New machinery is being purchased for this enlargement and some is being sent from another plant of this company at Erwin which is being dismantled.

Some new types of machinery and equipment were introduced during the present year. The Feldspar Milling Company is using an air-swept Hardinge mill for fine grinding, and also a tractor mounted on caterpillars for use between its mines and mill. The Carolina Mineral Company, Spruce Pine, N. C., the mining division of the Consolidated Feldspar Corporation, has introduced gasoline power shovels in some of its quarries. The use of jaw crushers at the mines to break up the spar for better selection also came into wider practice.

There was little change in the mining field, and it is expected that North Carolina will lead the country in feldspar production, during 1929, by about the same margin as last 1928—slightly more than one-half of the country's production coming from that state, or more than 100,000 tons. For the first time, however, the state looks forward to leading in the amount of spar ground as well as mined, and in the erection of new mills, two having been erected within its borders, while during the year Tennessee, hitherto the leading state, reduced its number of mills from two to one.

There was about the usual number of new mining ventures, some more or less successful, while a number were considered complete failures. A most interesting development in this line was the discovery in Madison County—a section hitherto unworked—of deposits of high potash feldspar. While the veins there can be traced for several miles across country, the production has so far not been sufficient to influence to any extent the production of the state as a whole, as the spar seems to exist mainly in pockets of no great size. Work is progressing, however, and the discovery of this source within hauling distance of the mills indicates that the Spruce Pine district of North Carolina may not yet be as thoroughly prospected as many have believed.



Mill of Southern Feldspar, Incorporated, Toecane, N. C.

Greatest Development of Crushed-Stone Industry In 1929 Was Improvement of Existing Plants

Tendency Was to Decrease Production Costs and Increase Efficiency Rather Than to Increase Production

THE past year saw many new crushed-stone plants go into operation in various parts of the country. Many other plants also were enlarged during the year. This expansion, however, was only in proportion to the normal increase in the demand for crushed stone and did not surfeit the market. The prevailing tendency throughout the country was to modernize older plants, installing the latest types of machinery so that these plants could compete with the newer plants supplying the same markets. One important development is the provision being made in these plants for the installation of equipment to wash the product. This is a result of the more stringent specifications for building material rapidly being put into effect in all parts of the country. Some of the outstanding new plants of the year are reviewed in this article to illustrate the various types now popular.

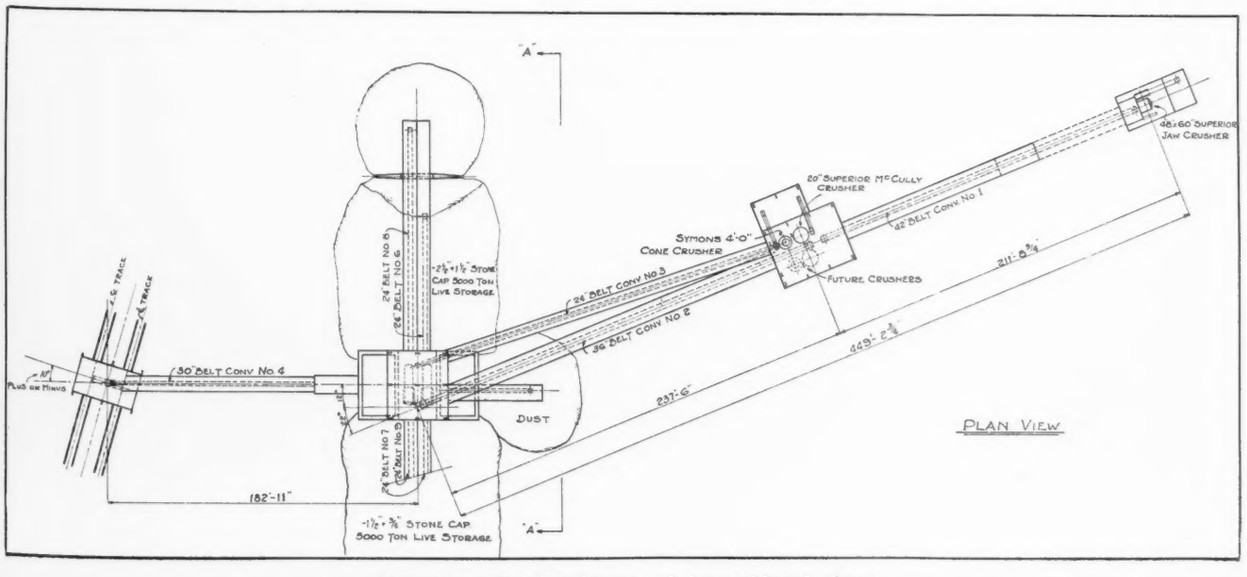
Consolidated Quarries Corp., Lithonia, Ga.

Probably the outstanding crushed-stone plant of the year is the one put into operation on April 1 of this year by the Consolidated Quarries Corporation of Atlanta, Ga. This plant is of all-steel and concrete construction and uses belt conveyors for all handling of material, including storage and reclaiming. A tunnel conveyor system allows about 20,000 tons of stone to be loaded from storage without any rehandling. The plant has a capacity of about 200 t.p.h. but can be easily enlarged to almost double this capacity.

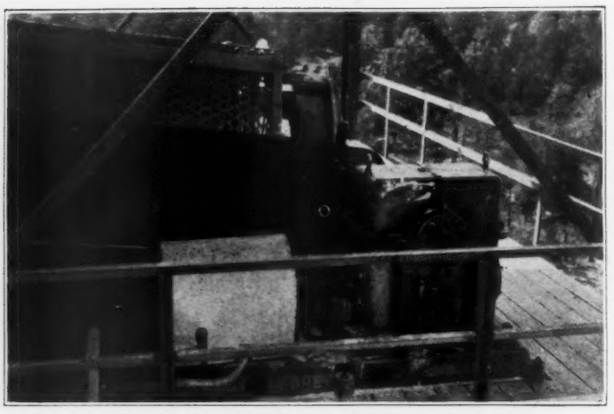
Shovel loading truck in quarry at Consolidated Plant

The plant is located on a 520-acre property near Lithonia, about 20 mi. east of Atlanta. The deposit is a mountain of granite, 150 ft. high at its peak, covering about 115 acres, which is estimated to contain 15,000,000 tons of rock above the present quarry level. This mountain is a granite formation very similar to its neighbor, the famous Stone Mountain on which the Confederate Memorial is being carved, which lies about ten miles to the northwest.

The quarry was opened into the base of the mountain with Ingersoll-Rand tripod air drills using 1½-in. steel. A Bucyrus 100B 2½-cu. yd. electric crawler shovel loads the stone into 7½-ton Autocar trucks with 6-cu. yd. Easton side-dump bodies.



Plan view showing layout of Consolidated plant



Another view of one of the revolving screens

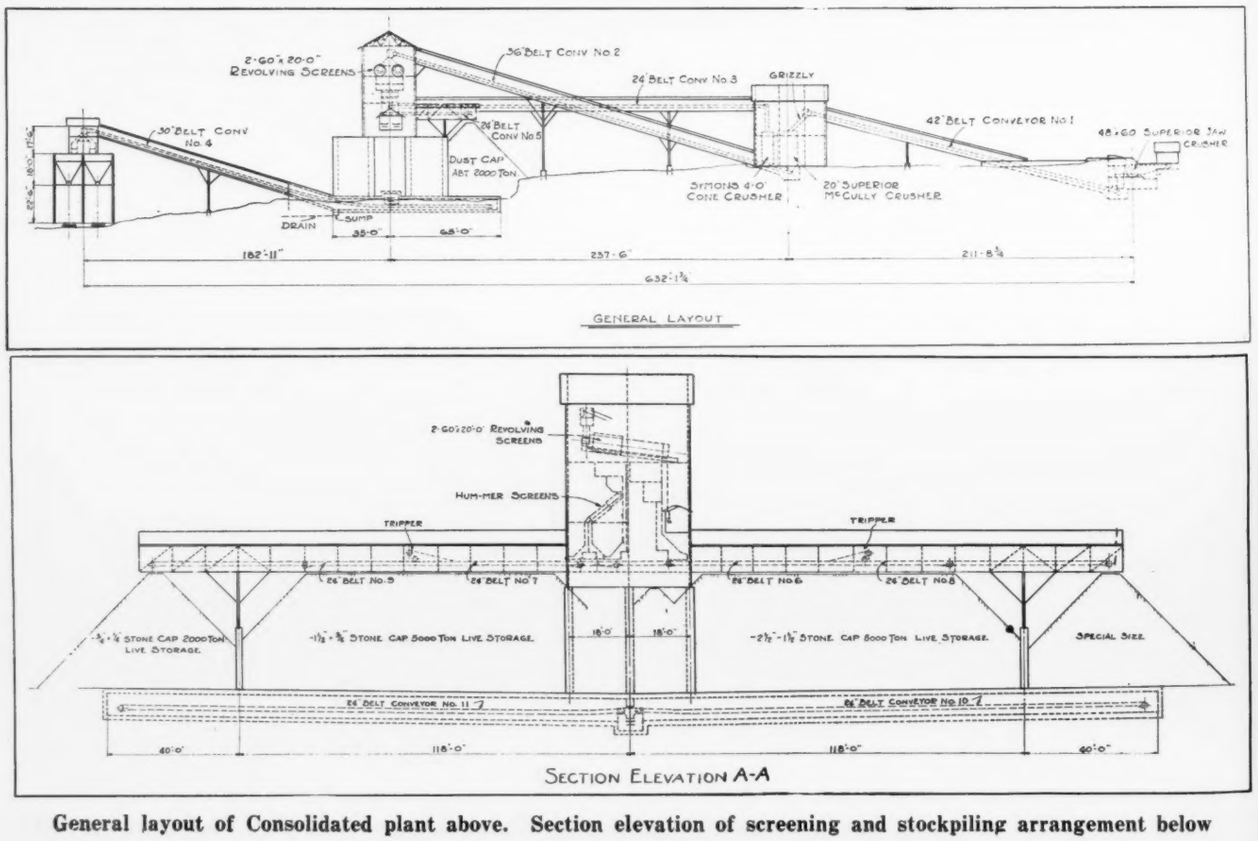
These are dumped into the primary crusher by a Curtis air hoist.

The Allis-Chalmers Superior 48-in. by 60-in. jaw primary crusher discharges onto the 42-in. 200-ft. centers belt conveyor to the secondary crusher building. A 2½-in. rail grizzly over the crusher box sends the coarse stone to the Allis-Chalmers Superior McCully 20-in. gyratory secondary crusher. The crushed stone and the fines from the grizzly go to a 36-in. 247-ft. centers inclined belt conveyor to the screening building where it discharges through a split hopper to the sizing screens which are each driven through Jones worm-gear speed reducers.

The two 5-ft. by 20-ft. Allis-Chalmers revolving screens make two sizes, oversize, and screenings. The oversize goes by a 24-in. horizontal belt conveyor on 216-ft. centers back to the secondary crusher building where it is discharged into a 4-ft. Symons cone crusher. The recrushed oversize feeds to the same inclined conveyor as the secondary crusher and goes back through the screens. The screenings go to two 4-ft. by 5-ft. Hum-mer double-deck vibrating screens which produce two sizes and dust.

A series of five belt conveyors distribute the material to storage. A 24-in. horizontal belt conveyor (No. 6) on 84-ft. centers running north from the screening plant distributes the 2½-in. to 1½-in. stone over a 5,000-ton capacity storage pile by means of a Stephens-Adamson movable tripper. A chute can be used to store stone close to the screening plant. A 24-in. conveyor on 154-ft. centers (No. 8) running parallel to this conveyor in the same housing is used for storing special sizes on a pile with a capacity of 2,000 tons. A concrete retaining wall separates the two stockpiles.

A similar arrangement of conveyors on the south side of the screening building is used to distribute two additional sizes. A 24-in. conveyor (No. 7) on 92-ft. 6-in. centers stores the 1½-in. to ¾-in. stone by means of another movable tripper. A 24-in. conveyor (No. 9) parallel to this on 129-ft. centers stores the ¾-in. to ¼-in. stone. These two piles are also separated by a concrete retaining wall. Dust is stored in a pile immediately east of the screening building by a 24-in. belt conveyor (No. 5) on 55-ft. centers.

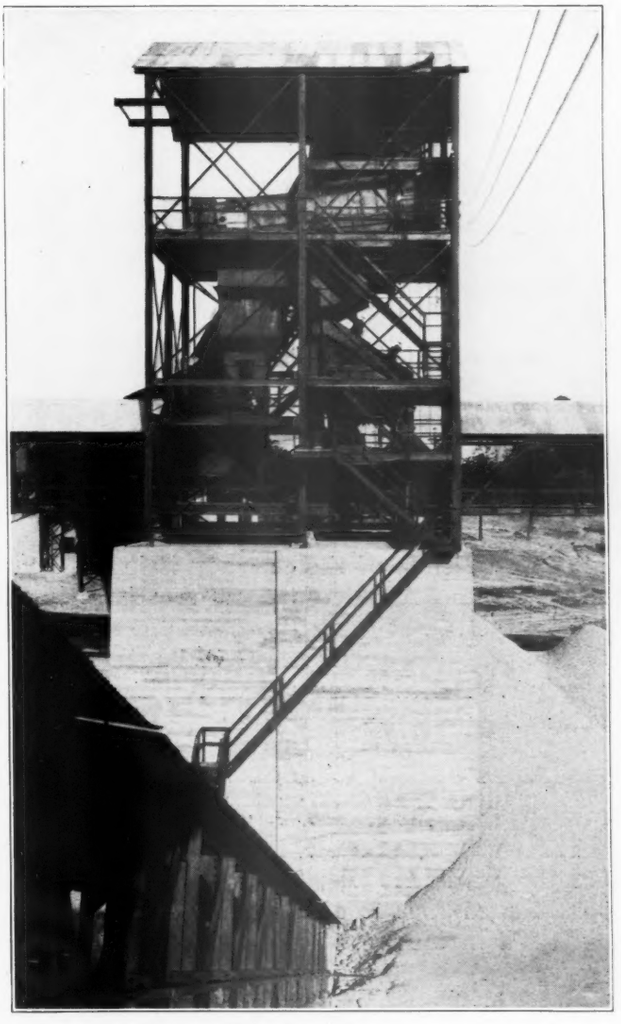


General layout of Consolidated plant above. Section elevation of screening and stockpiling arrangement below

Two sizes of stone can also be stored through chutes in two concrete bins which serve as a foundation for the screening building. A 30-in. belt conveyor (No. 4) on 248-ft. centers operating in a concrete tunnel under the screening plant runs from a point under the dust storage pile out under the west side of the screening plant where it runs on an incline to the loading bins. By means of this conveyor the two sizes in the concrete bins, the dust pile and part of the two sizes stored alongside the screening plant to the north and south can be loaded direct. When the demand approximates the rate of production very little handling of material is necessary, only conveyors No. 4 and No. 5 being needed. There are also 24-in. tunnel conveyors running north (No. 10) and south (No. 11) from the screening plant to reclaim the material stored by the two sets of parallel conveyors. These are both on 152-ft. centers and discharge onto the loading conveyor (No. 4). The total storage capacity of the plant is approximately 40,000 tons of graded sizes, of which about half is live storage.

The twin steel loading bins each have a capacity of 100 tons. They discharge into cars on two tracks, one under each bin, allowing continuous loading. A 3-mi. switch track connects the plant to the main line of the Georgia railroad. Most of the product goes to Atlanta for building and pavement work.

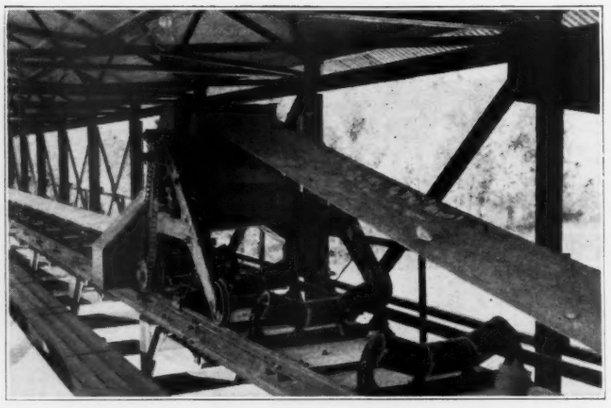
All of the motors and electrical equipment were furnished by the Allis-Chalmers Manufacturing Company except the Cutler-Hammer controllers and switches. Stephens-Adamson belt conveyors and trippers and New York Belting and Packing Company conveyor belting are used. The revolving screens are driven through Jones speed reducers, the crushers by Goodyear belting and the conveyors through reduction gears.



Screening building, showing arrangement of screens, as viewed from loading hoppers

A substantial building houses the machine and blacksmith shop, the five-panel switchboard and the Ingersoll-Rand PRE2, 23-in. by 16-in. by 14-in. air compressor. An office building houses the su-

Consolidated plant from Southeast, screening building (left), secondary crusher building (right)



Tripper on one of the stockpile conveyors at the Consolidated plant

perintendent's office, a drafting room and a storeroom for tools and spare parts.

The main office of the company is in the Bona Allen Building, Atlanta. Officers are: A. F. Hyde, president; R. H. Cobb, vice-president; A. G. Loomis, secretary and treasurer; and G. A. Austin, general manager. Nelson Severinghaus is plant superintendent.

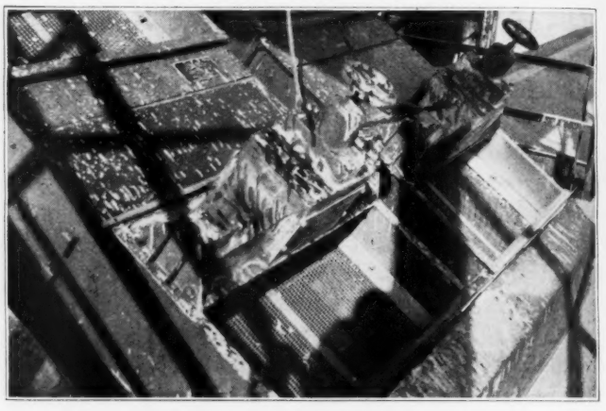
The Federal Crushed Stone Co., Buffalo, N. Y.

The new plant of the Federal Crushed Stone Company, near Buffalo, N. Y., which went into operation on June 15 of this year, was completely described in the Dec. 4, 1929, issue of PIT AND QUARRY. A brief description, however, will be included in this review as this plant is one of the outstanding new operations of the year with many interesting and unusual features. It has a capacity of 300 t.p.h.

The two steel car-loading bins at Consolidated plant, with car under one of them for loading

The property, which consists of about 100 acres, all of which is limestone, lies about 7 mi. east of the business center of Buffalo on the Lehigh Valley railroad. The deposit is unusual in that it is almost perfectly level, the surface being so smooth that it is used as a roadway from the plant to the nearby concrete highway. Three long pits once excavated by the railroad were used to advantage in the design of the plant as crusher and conveyor pits and serve as loading tunnels for trucks and cars from the silo storage bins placed between the tunnels.

A new type Ingersoll-Rand wagon-mounted drifter drill is being used with 1¼-in. steel to a maximum depth of 30 ft. A 5-yd. Marion crawler steam shovel loads five 7½-ton trucks which haul to the plant. Two of these are Macks, two are Pierce-Arrows, and one is a White. A Marion 1½-yd. Type 460 electric crawler shovel which is used



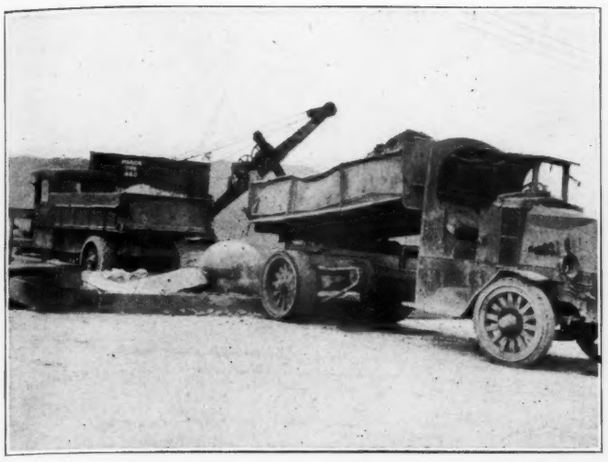
Part of battery of Hum-mer vibrating screens at Consolidated plant

for stripping and stockpiling is also used in the quarry.

The trucks discharge directly into the Allis-Chalmers McCully 42-in. gyratory primary crusher. This discharges onto a 42-in. 180-ft. centers inclined belt conveyor to a 150-ton capacity surge bin. A Chain-belt 36-in. apron feeder discharges onto a 4-ft. by 6-ft. Niagara single-deck vibrating screen. The coarse stone goes to the Allis-Chalmers "Newhouse" 10-in. secondary crusher which, along with the fine stone from the screen, discharges onto the 30-in. 261-ft. centers belt conveyor to the screening plant.

The screening plant is divided into two distinct units either of which can be operated separately in spite of a breakdown in the other. Eight Niagara screens are used here making a total of nine in the entire plant. The conveyor discharges through a split chute to the two units. The first two screens in each unit are 8 ft. double-deck. The undersize from these goes by short inclined belt conveyors to a single- and a double-deck screen for final sizing.

The eight 500-ton capacity concrete stave bins have steel hoop bracing. They are 22 ft. in diam-



Trucks discharging to primary crusher at Federal plant, stockpiling shovel in background

eter by 40 ft. high. Any size of stone produced can be chuted directly to any one of these different bins. Space has been left for additional screens and for two silos without requiring any alteration of the plant.

The plant office contains a Fairbanks 47,000-lb. capacity "Springless" scale for weighing out the stone, about 50 per cent of which is shipped out by truck to Buffalo and vicinity. A complete machine and blacksmith shop is maintained as well as a compressor house and oil and grease storage building. The plant also has its own deep well for water supply and a 150,000-gal. capacity steel water tank.

Rex-Stearns belt conveyors are used throughout, each being driven through Falk speed reducers. The primary crusher, feeder, conveyors, and screens are all driven through Texrope drives. The screens are all driven by Fairbanks-Morse and all other equipment by Allis-Chalmers electric motors.

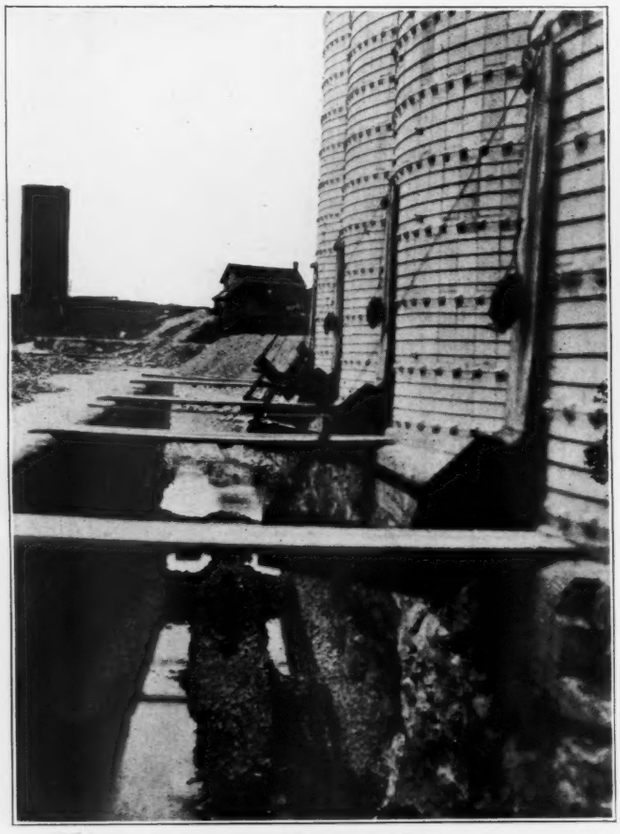
The officers of the company are: H. N. Snyder, president; Mark Kyler, vice-president; and Hugh McNabb, secretary-treasurer and plant superintendent.

The gearless secondary crusher with scalping screen visible in background

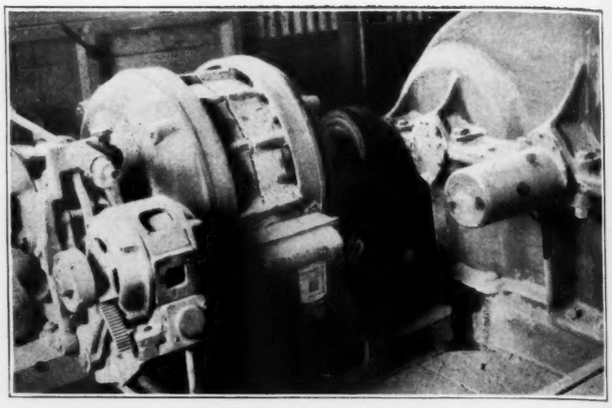
Herzog Lime and Stone Company, McVitty's, O.

The new crushing and fine-screening plant of the Herzog Lime and Stone Company, at McVitty's, O., is only one of two units operated there but is of such advanced design that it must be included among the outstanding developments in the crushed

Five-cu. yd. steam shovel loading unusually large rock into truck. Federal plant in background



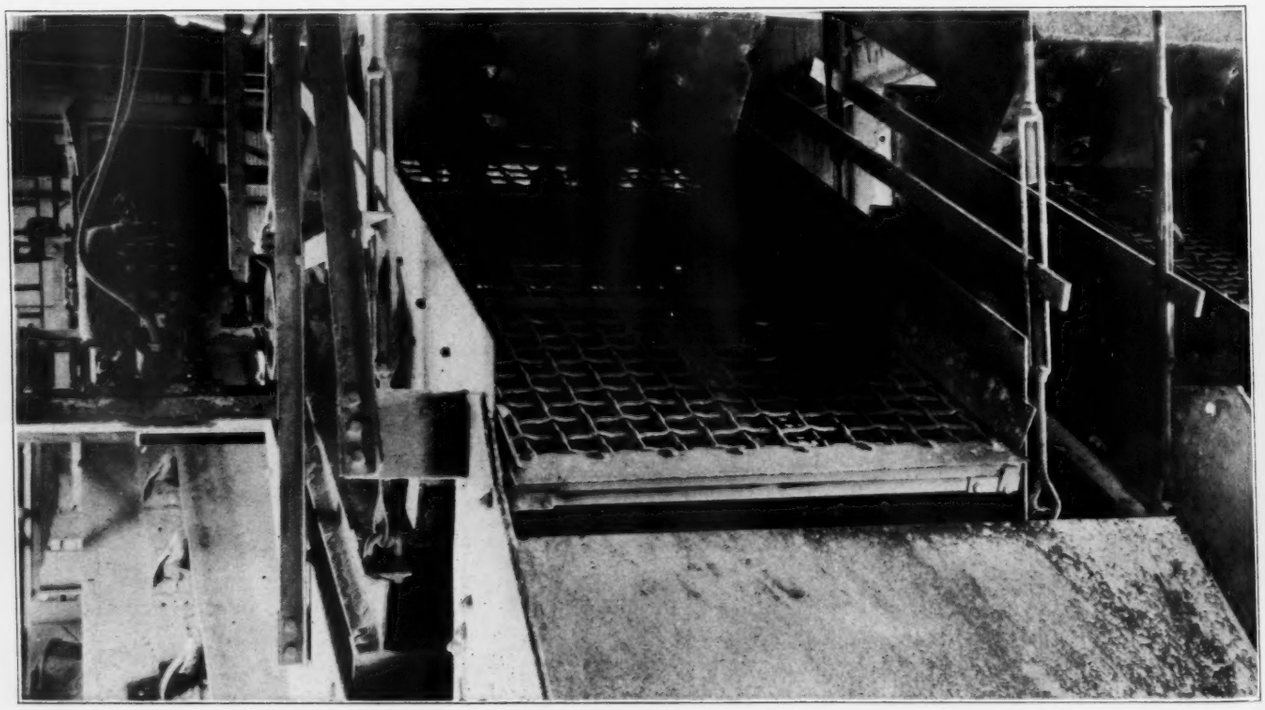
Tunnels for truck loading, showing type of quadrant gates used



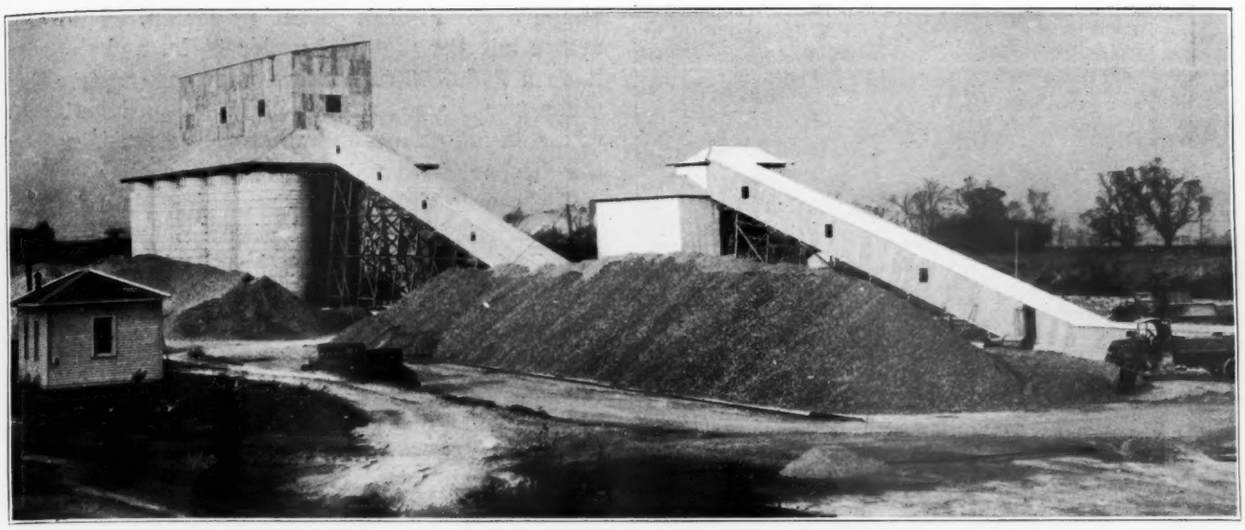
Motor and speed reducer driving main belt conveyor. Magnetic brake at left prevents reversing under load

stone industry during the year. The original plant had been in operation for a number of years until it was decided to increase production and prepare for the tendency toward the use of finer stone in concrete work. With this purpose in mind the old plant was used for coarse screening only and a new secondary crushing and screening plant was built. This was designed by the Stephens-Adamson Manufacturing Company and has a capacity of 300 tons per hour, all of which can be crushed to minus 1¼-in. if desired. This capacity can be doubled by merely installing additional equipment. It is of all-steel construction with concrete foundations.

In the quarry a Marion No. 70 3½-yd. electric shovel loads into 7-ton capacity White trucks which haul the stone to the 42-in. Superior McCully primary crusher. A 400-ft. inclosed conveyor carries the crushed stone to a 72-in. by 40-ft. rotary screen. This scalps the minus 1½-in. stone while the stone over 1½-in. is sized and stored in bins over the two loading tracks. The stone from these bins can be diverted by an 18-in. Stephens-Adamson



Interior view of Federal plant showing first set of sizing screens, motor drives and conveyors to final sizing screens



Federal plant from southwest with office at left. Note smooth pavement-like surface of rock deposit

belt feeder to a 4-ft. Symons cone crusher. This reduces to minus ½-in., the product going by return conveyor back to the main conveyor and through the rotary screen.

The minus 1½-in. stone from the rotary screen all goes to a 150-ton capacity storage bin. A Stephens-Adamson belt feeder discharges onto a 30-in. Stephens-Adamson inclined belt conveyor on 275-ft. centers. This is driven through a Falk herringbone gear-reducer. The conveyor discharges through a bifurcated chute into three pairs of Niagara 3-ft. by 6-ft. double-deck vibrating screens on three floors of the building. The sizes produced by these screens can be chuted direct to bins or diverted onto a mixing conveyor which also discharges to one of the bins. The six steel bins have a capacity of 150 tons each and discharge directly into cars on two tracks under the bins. Side outlets allow loading into trucks. One of the features of the operation is the interlocking of all machinery drives. In case of a breakdown of one unit, this automatically stops all preceding machinery, preventing any damage to machinery or accidents to workers. This interlock also insures starting of machinery in proper sequence. Sufficient headroom was left in the screening plant for the possible installation of a washing system.

A Stephens-Adamson J. F. S. variable speed changer is used on the feeder from the coarse stone bin to the secondary crusher insuring uniform feed. Another speed changer on the conveyor to the fine screening plant allows regulation of the feed to attain maximum screen efficiency. Texrope drives are used to drive both crushers and the vibrating screens. General Electric motors and Cutler-Hammer controllers are used throughout.

General view of new Herzog plant and quarrry. Lime plant and old crushing plant at left

Truck dumping to primary crusher at Dolomite plant

The company also operates a 12-kiln burning and hydrating plant. Bert Herzog is president and general manager and Wm. Wentz is general superintendent.

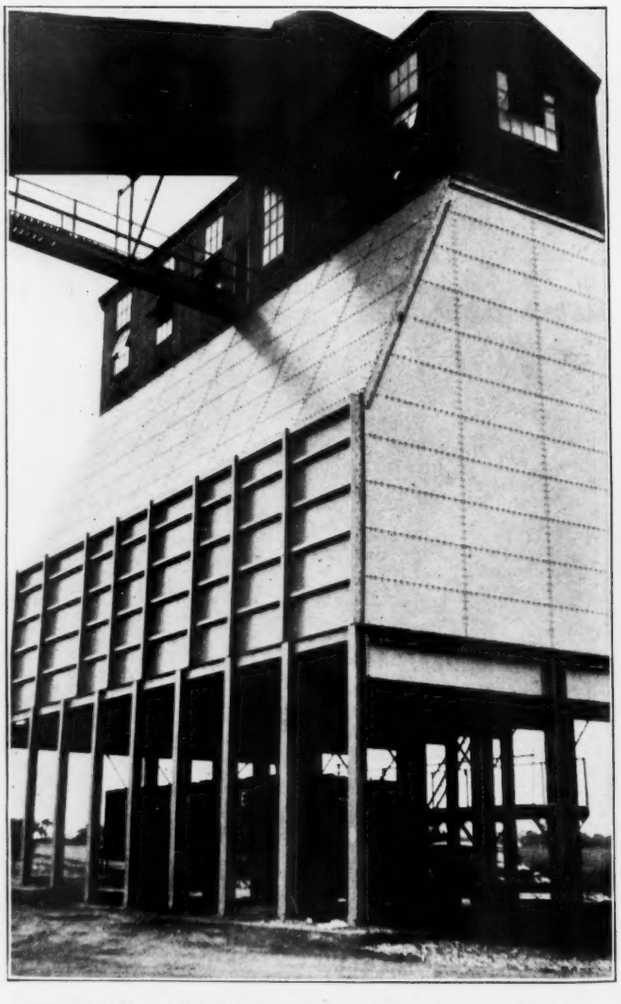
Dolomite Products Company, Rochester, N. Y.

Dolomite Products Company, of Rochester, N. Y., has again built a plant which must be recognized as one of the leading plants of the year. This new plant, which was formally opened on July 6, was designed by John H. Odenbach, president of the company. Some of the features of the plant are the use of trucks for hauling stone from quarry to plant and of live roll grizzlies for the scalping and coarse screening operations. The plant was designed to have a capacity of 500 t.p.h.

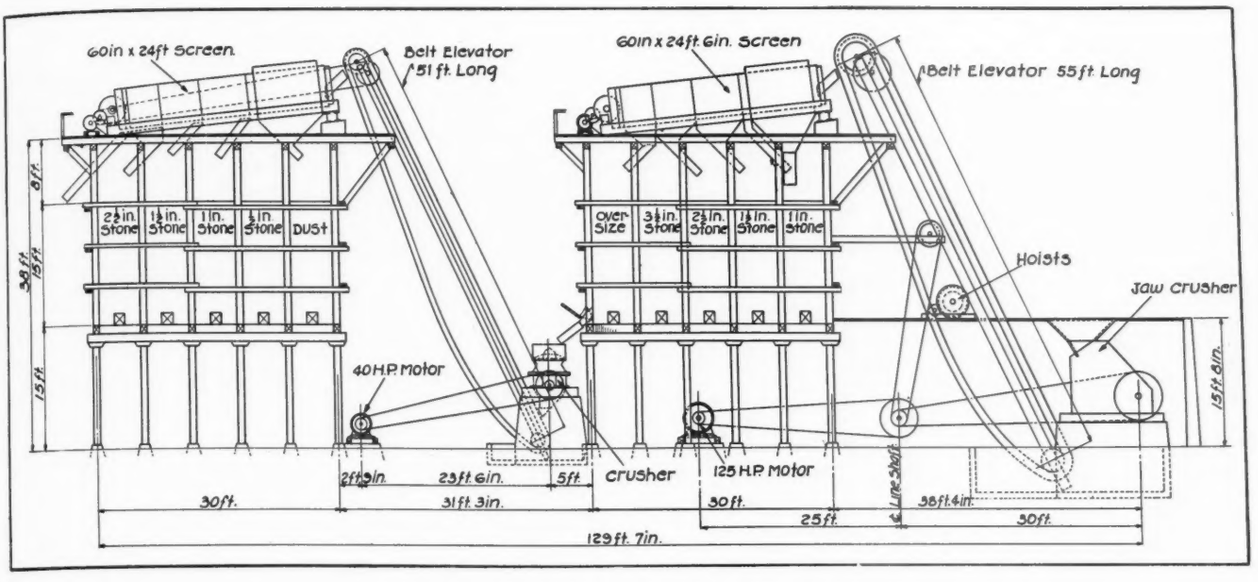
The plant is located on 143 acres of property about 4 mi. east of Rochester, in the village of Penfield. A Marion 1¼-cu. yd. gas-electric shovel removes the overburden and drilling is done with Sanderson-Cyclone electric well drills. The stone is loaded by a Marion 2¼-cu. yd. electric shovel into specially built 6-wheel heavy-duty Mack trucks with 12-ton capacity steel bodies. These haul the stone from the quarry to the primary crusher.

The 42-in. Allis-Chalmers primary crusher discharges to a 42-in. inclined belt conveyor on 105-ft. centers, which in turn discharges to another 42-in. inclined belt conveyor on 110-ft. centers. This discharges to a six-roll scalping roll grizzly of own design, the oversize going to the No. 5½ Symons cone secondary crusher. The throughs go to a Niagara double-deck vibrating screen. This separates out the material under ⅜-in. and deposits it on a 24-in. 50-ft. centers waste conveyor. The other two sizes go to a 42-in. inclined belt conveyor on 235-ft. centers where they are joined by the discharge from the secondary crusher.

The coarse sizing in the screening plant is done by a series of five roll grizzlies similar to the one described above. These make all sizes over 1-in. The under 1-in. material goes to a set of three Niagara vibrating screens. The first two are double-deck and have the same size mesh to insure removal of all fine material. The third screen is single-deck. All stone drops directly into the bins without requiring chutes. The steel bin structure is divided into 14 compartments in two rows with a total capacity of 2,500 tons. These load from one row into cars and from the other into trucks for distribution. At present all distributing is being done by trucks of which 45 are owned by the company for this and the other plant at Coldwater, N. Y. Most of these trucks are Macks, a number of them of the same 6-wheel type being used in the quarry. A 25-ton Brownhoist gasoline locomotive crane stockpiles material and switches cars.



View showing car loading under bins at Dolomite plant



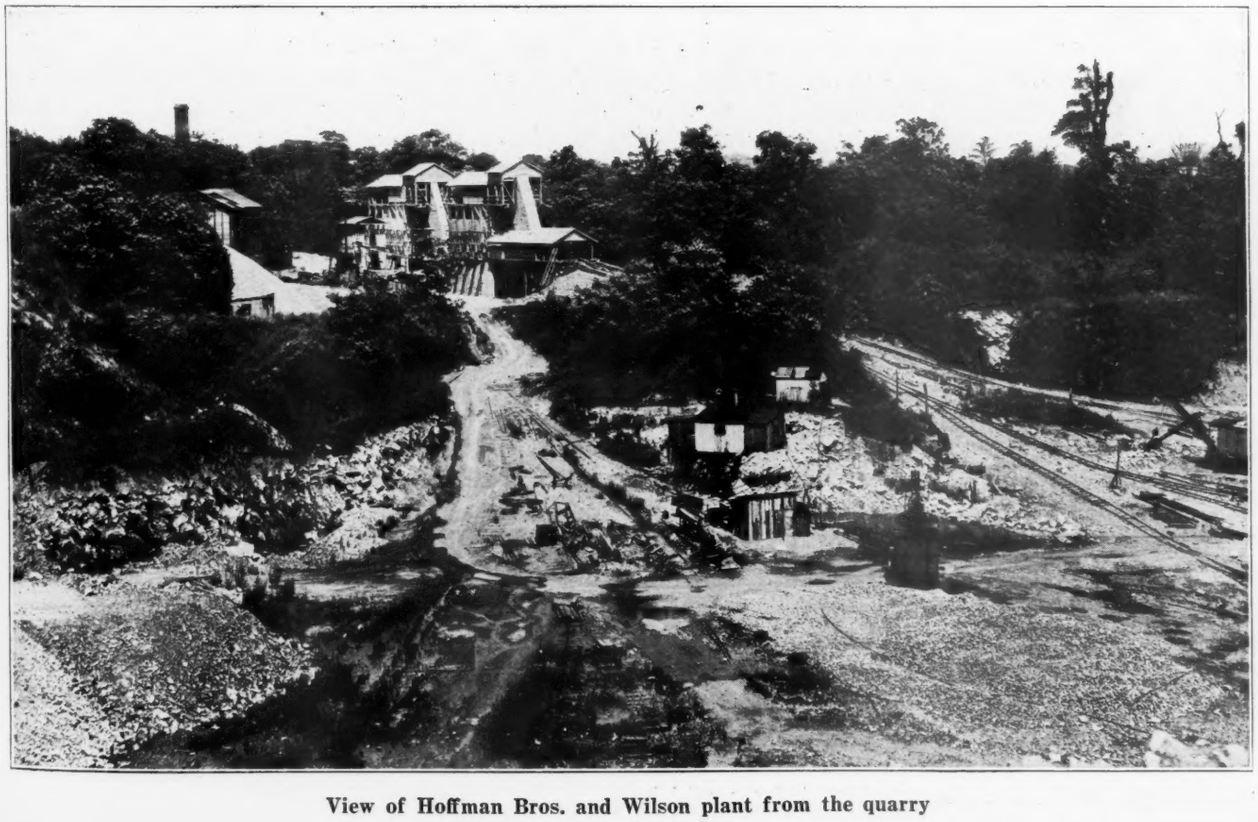
Sketch elevation, Hoffman Bros. and Wilson plant

The entire operations are wired for night operation. All machinery is driven through Texrope drive by Allis-Chalmers motors. All other electrical equipment was furnished by the General Electric Company. The belt conveyor idlers were built to the company's design by the Brownhoist Company and the conveyor belting was furnished by the U. S. Rubber Company. The plant is of permanent construction throughout with concrete foundations and structural steel frame work. The two main conveyors and the two main plant buildings are enclosed with metal siding and roofing.

Officers of the company are: John H. Odenbach, president and general manager; Mathew P. Odenbach, vice-president; Frank J. Waddell, secretary; and A. F. Neely, plant superintendent.

Hoffman Bros. and Wilson, Harrisburg, Pa.

Another new crushed stone plant which went into operation during the year was that of Hoffman Bros. and Wilson at Harrisburg, Pa. While not a large plant, having a capacity of about 600 tons per day, it is of unusual design made neces-



View of Hoffman Bros. and Wilson plant from the quarry

Reduction crusher and elevator

sary largely by the physical limitations of the plant site. An increase in capacity to 1,000 tons per day can be made by installing larger crushers, conveyors, etc., without altering the plant. The plant went into operation on April 10.

The quarry has been operated for a good many years but, the previous plant proving unable to cope with modern conditions, it was decided to build a new plant rather than to remodel the old one. The location, one mile from the center of Harrisburg, made it necessary to provide adequate truck loading facilities for local deliveries without sacrificing the car-loading facilities for shipment over the Reading railroad on whose main line the plant is located. The Smith Engineering Works designed the plant with these things in mind.

The quarry has a semi-circular face 100 ft. high and 1,500 ft. long and the stone is hard, dense and free from clay. Drilling and blasting is done in the usual manner. Erie Type B ¾-yd. steam shovels load the stone into 3-yd. side dump cars which are hauled up a double-track incline by high-speed electric hoists.

Cars are discharged from both sides into the Farrel Type 15-B, 24-in. by 36-in. jaw crusher. A Telsmith 55-ft. centers belt bucket elevator takes the stone to a 60-in. by 24-ft. Telsmith Hercules screen which has an 8-ft. perforated plate jacket. The four sizes produced go to four of the five separate compartments in the wooden bin which supports the screen. This bin is 30 ft. long, 18 ft. wide and 15 ft. high and is supported on steel I-beams over a concrete foundation. Oversize and tailings go to the fifth compartment from which they feed to the Telsmith No. 40 gyratory reduction crusher.

This crusher discharges to a Telsmith 51-ft. centers bucket elevator which feeds to another 60-in. by 24-ft. Hercules rotary screen similar to the first. This produces four sizes and dust which go to five compartments in a bin which is identical in every way to the one previously described. Loading is done through Telsmith Siquad bin gates. W. E. Wilson and George Hoffman are the principals of the firm.

U. S. Steel Corporation Moves to Buy Atlas Portland Cement Company

If stockholders of The Atlas Portland Cement Company approve, the U. S. Steel Corporation will purchase the nine plants and other assets of the Atlas company, making the steel corporation the largest producer of portland cement in the world.

Announcement of the proposed deal was made this week by the mailing of a letter to all Atlas stockholders by John R. Morron, president of the cement company, in which he urged the stockholders to accept the proposition, which would exchange five shares of Atlas stock for one of U. S. Steel common. Atlas stock has been quoted this week around 35, while U. S. Steel is between 170 and 175. Definite announcement of the acquisition is expected to be made on December 28, when a special meeting of Atlas stockholders will be held to ratify the agreement.

Under the proposed plan, the Atlas company will be merged with the Universal Portland Cement Company, the cement subsidiary of the steel corporation. The combination would give the Universal company an aggregate capacity of 56,500,000 bbl. annually.

There are 899,211 shares of Atlas stock outstanding. These would be exchanged for 180,000 shares of U. S. Steel, valued at $31,320,000. The preferred stock of the Atlas company was retired recently and there is no bonded debt.

The Atlas Portland Cement Company has its largest production at Northampton, Pa., where three separate plants manufacture regular portland cement, Atlas White and Lumnite, the latter being a high early strength cement. Two plant units, located at Hannibal, Mo., manufacture standard cement and Lumnite. Other plants of the Atlas company are located at Leeds, Ala., Hudson, N. Y., Independence, Kans., and Waco, Tex.

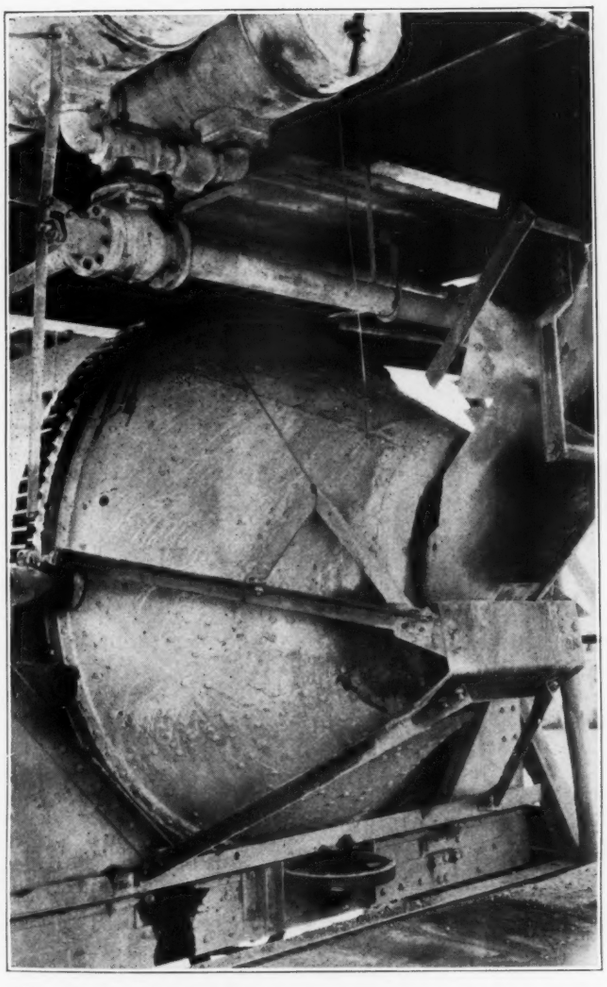
The Universal Portland Cement Company operates plants at Buffington, Ind., Pittsburgh, Pa., and Duluth, Minn.

Rumors of the acquisition have reached PIT AND QUARRY from time to time during the past year, but no definite announcement was previously permitted.

New Installations Reflect Development of Concrete Central-Mixing Plant Industry

THE past year has again witnessed a large increase in the central-mixing of concrete with new plants going into operation in all parts of the country. Practically every city in the United States of over 100,000 population now has one or more commercial central-mixing plants and many are operating successfully in cities of almost half that size.

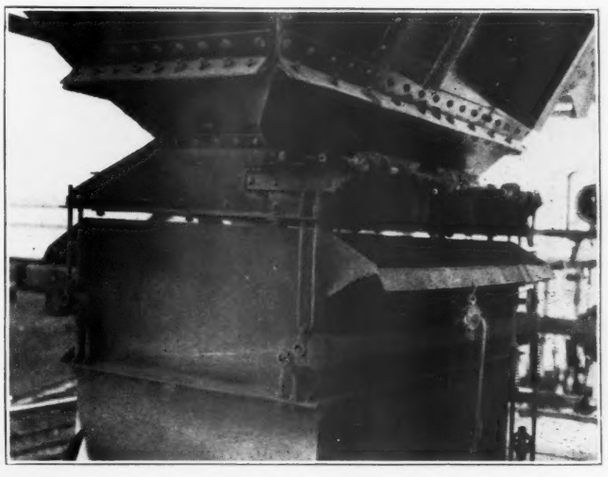
Most of the new plants, as well as the older ones, are operated by aggregate producers or by independent companies securing their aggregate directly from producers. Some of these plants are operated by material dealers in connection with their distributing yards, but these are in the minority. There are also a few plants operated by contractors who use the concrete on their own construction work, selling what surplus there may be. Sand and gravel, crushed stone and slag are used as aggregates.



Two-yard mixer with water-measuring tanks above, at Woodstock plant

The Woodstock Slag Corp.

The central-mixing plant of the Woodstock Slag Corp., in Birmingham, Ala., is one of the most interesting new plants of the year. It is of the most modern type of construction, uses the latest and most efficient equipment, and uses slag produced at a plant on the same property, as aggregate. This



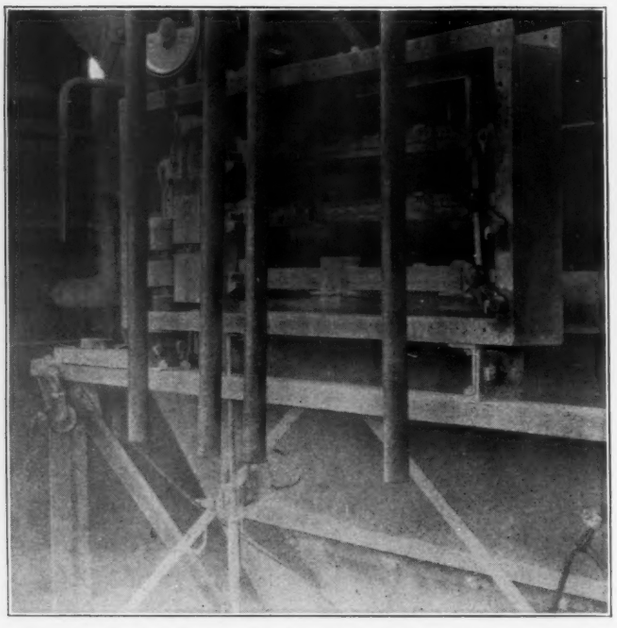
Weighing batcher with scale at extreme right, in Woodstock plant

plant, which went into operation early in the spring of the year, was completely described in the July 17 issue of PIT AND QUARRY. This plant is about 2½ miles from the heart of the city.

The slag used as coarse aggregate is produced at the nearby Vanderbilt plant of the Woodward Iron Co. It is then processed in the crushing and screening plant which is owned by the same company and located on the same property as the concrete plant. Sand, purchased from producers in the Montgomery and Salem districts, and slag are conveyed to the mixing plant by a 20-in. Variety inclined belt conveyor on 230-ft. centers. Goodyear conveyor belting is used and the conveyor is driven by a 15-hp. motor through a Jones spur gear speed reducer.

The conveyor discharges into any of four steel bins, two for slag and two for sand, with a total capacity of 270 cu.yd. There were originally three bins but one was partitioned off. Three of the bins discharge by means of Blaw-Knox hand-operated selectively controlled gates, and the fourth through a separate chute into the Blaw-Knox 8,000-lb. capacity weighing batcher. This is equipped with a Standard scale with the last 200 lb. registering on a dial. These discharge through a two-way hopper into either of the two mixers on the floor below.

These are T. L. Smith 1-cu.yd. and 2-cu.yd. mix-



The sand and gravel weighing hopper with scale and dial above, in the Albany plant

ers driven respectively by 20-hp. and 40-hp. electric motors. Mixing water is automatically measured by three Smith 42-gal. water tanks, one for the small mixer and two for the large. Koehring batchmeters automatically control the time of mix.

Cement is stored in a 1,000-bbl. capacity cement storehouse alongside the concrete plant and is delivered to the batching floor by a Jeffrey barrel elevator driven through a Palmer-Bee speed reducer. The cement is dumped directly into the mixer and the sacks dropped through a chute to a room where they are later cleaned by a Northern Conveyor Co. bag cleaner.

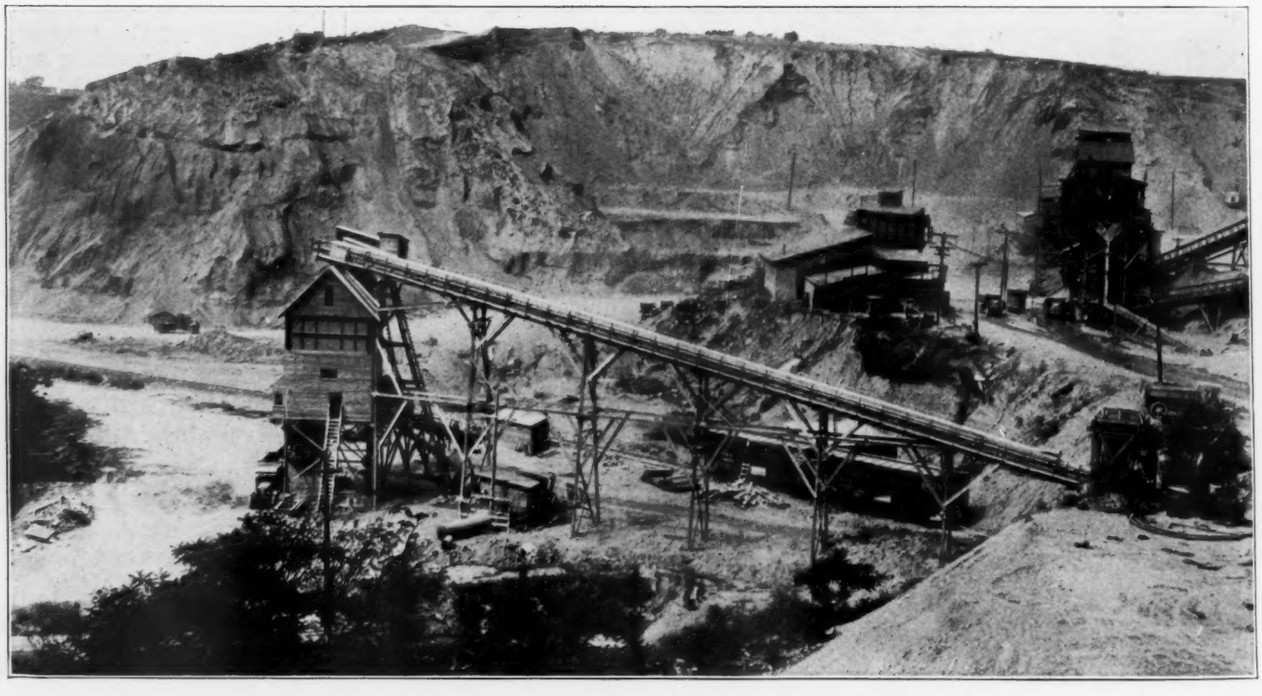
The mixing plant is of concrete and structural steel construction with corrugated metal siding and roofing. All steel and bins were furnished by the Ingalls Iron Works. The concrete plant has a capacity of 100 cu.yd. per hour and the slag plant of 50 tons per hour. The same company operates another slag plant at Fairfield which produces 3,000 tons of sized slag and 100 carloads of pit-run slag daily.

The main office of the Woodstock Slag Corp. is in the Southern Railway Bldg., Birmingham, Ala. Officers are: Geo. A. Mattison, president; Geo. A. Mattison, Jr., vice president and general manager; and J. H. Worrell, secretary. J. A. Jennings is superintendent of the Woodward plant.

The Albany Trucking Co.

The central mixing plant of the Albany Trucking Co., at Albany, N. Y., is typical of the new plants which have gone into operation this year. Only the most modern types of equipment are used and the plant is of concrete and steel construction. Both crushed stone and sand and gravel are used as aggregate, the latter being produced by a plant on the same property. The concrete plant went into operation in April of this year and was completely described in the November 20 issue of PIT AND QUARRY. It has a capacity of 450 cu.yd. of concrete in an 8-hour day and is located less than 2 miles from the heart of the city.

Sand and gravel is dumped from the neighboring plant into a hopper from which a Good Roads apron feeder discharges onto a 24-in. Stephens-Adamson belt conveyor on 180-ft. centers to the mixing plant. Crushed stone is dumped from cars through a track



Albany plant from east showing truck being loaded at left and sand and gravel plant at right with truck discharging to conveyor hopper

hopper onto a 20-in. inclined belt conveyor. This feeds to a Good Roads belt bucket elevator which discharges into one of the four compartments in the 200-ton capacity steel aggregate bin.

Bulk cement is unloaded from box cars with a Miller power scraper into a hopper feeding a 5-in. Fuller-Kinyon pump. This discharges through a 4-in. line into a 120-ton capacity three-compartment steel cement bin alongside the aggregate bins. A screw conveyor feeds the cement to a 60-cu.ft. steel hopper over the weighing batchers.

The aggregate, sand and gravel or crushed stone, discharges into a weighing batcher equipped with a three-beam scale and dial. The cement discharges by gravity into a second weighing batcher with a two-beam scale and dial. Water is measured by a water meter into a measuring tank which discharges into the Chain Belt Rex 3-cu.yd. mixer. A Koehring batchmeter governs the time of mix. All of the concrete is delivered in ten Bartlett and Snow agitator truck bodies mounted on 6-cyl. Autocar chassis and equipped with Heil high-lift hoists.

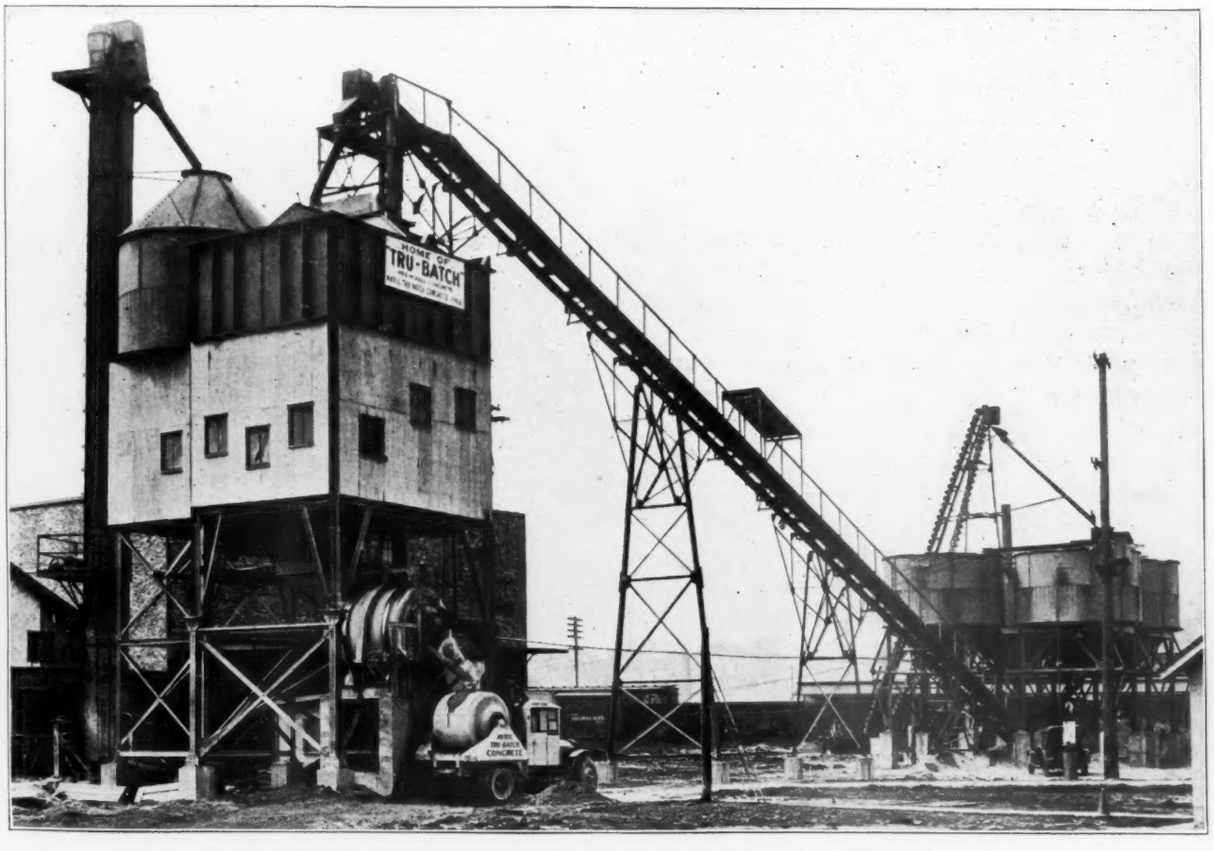
The steel bins and weighing batchers are furnished by the Butler Bin Co. General Electric motors, Allen-Bradley starting switches and Crouse-Hinds conduit are used throughout. N. D. Crowley is president and general manager of the company, which is an independent operation.

Avril Tru-Batch Concrete, Inc.

One of the country's most modern and efficient central mixing plants is that operated by Avril Tru-Batch Concrete, Inc., at Cincinnati, O. The plant has been in operation since October, 1928, and is located on a one and one-half acre tract on the Baltimore & Ohio railroad. The plant is of all-steel construction and was designed by Arthur C. Avril, president of the corporation, in co-operation with the Blaw-Knox Company. This company also furnished and installed much of the plant equipment.

Mixer discharging into one of the agitator trucks

Sand and gravel is shipped by railroad from a nearby plant. Three sizes of gravel and one of sand are purchased and all of the material comes from



View of plant of Avril Tru-Batch Concrete, Inc., at Cincinnati

the same pit to insure uniformity. The aggregate is dumped into a track hopper from bottom-dump railroad cars, which are spotted into dumping position by a Mead-Morrison 5,000-lb. capacity capstan-type car puller, driven by a 7½-hp. Lincoln motor.

View of cement elevator and bin at the Avril plant

From the hopper, the materials are elevated 65 feet to four Blaw-Knox circular steel bins. The elevator, a Columbus, with 8-in. by 16-in. buckets, is chain-driven by a 20-hp. motor. The bins, each 18 ft. in diameter, have a capacity of 196 tons. A swivel chute at the end of the elevator permits loading into any desired bin.

Swivel spouts discharge the material from the bins onto an 18-in. Columbus belt conveyor 185 ft. long, gear-driven by a 15-hp. motor. The conveyor carries the material to the top of the mixing plant, where it is emptied into a 200-ton Blaw-Knox steel bin, divided into four compartments for the three sizes of gravel and the sand. A swivel spout is used for selective unloading into the compartments.

A separate railway siding was installed for delivery of bulk cement. A Columbus scraper, powered by a 5-hp. motor, unloads the cement into an enclosed bucket elevator, equipped with 6-in. by 10-in. buckets, which elevates it 65 ft. vertically into a cylindrical Blaw-Knox steel bin above the mixing plant and alongside of the aggregate bin.

The four aggregate compartments and the cement bin are each equipped with a Blaw-Knox weighing batcher with a standard dial scale attached. Sand and gravel descends by gravity into the batchers, while a Jeffrey screw conveyor feeds the cement from the bin. A small air pump is used to keep the cement from clogging. After all the materials have been proportioned by weight, they are discharged by gravity into the mixer, a Ransome 2-cu.yd. type 56S, driven by a 40-hp. motor. A Ransome water-measuring tank measures the mixing water.

Design and control of the concrete mixture is made certain by using the fineness-modulus method of aggregate proportioning and the water-cement ratio, resulting in obtaining concrete of high quality and predetermined strength. Compressive tests made on samples for three mixes have resulted as follows:

Mix	*Seven-Day Test*	*28-Day Test*
1-3 -5	Over 2,000 lb.	Over 3,500 lb.
1-2- 4	Over 3,000 lb.	Over 4,500 lb.
1-1½-3	3,500 to 4,000 lb.	5,500 to 6,000 lb.

In cold weather, the water and aggregate are heated with live steam, supplied by a 25-hp. boiler manufactured by the Lookout Boiler Manufacturing Company. The concrete, as it leaves the plant,

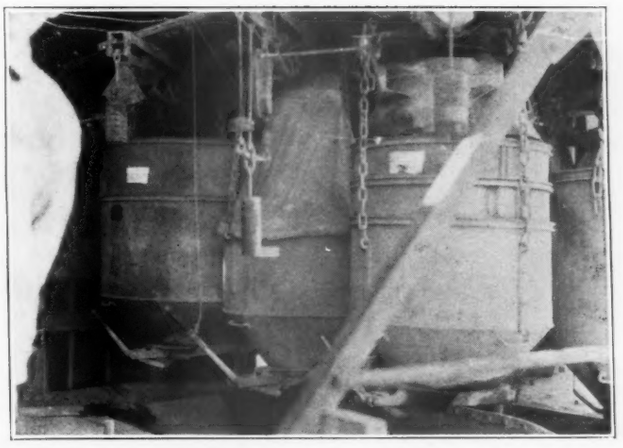
Body truck of Avril design

must be at 100 deg. F. and never drops below 85 deg. when delivered, regardless of the length of haul.

Two types of trucks are used for making deliveries. One is a LeBlond-Schacht, equipped with 2-cu-yd. rotary bodies which were designed by Mr. Avril in co-operation with the engineering department of the LeBlond-Schacht Company. Nine of these are in operation. The bodies rotate to permit agitation, turning on self-aligning SKF roller bearings from power taken off at the transmission. The

chassis are regular 2½-ton truck models and 6-cylinder Waukesha engines supply the power. The trucks are equipped with pneumatic tires with duals at the rear mounted on Budd steel wheels. The bodies are filled and emptied through a watertight door operated by a gear and ratchet mechanism. The other trucks are Hug Model 81 equipped with Hug redi-mix bodies and 4-cylinder Buda engines, equipped with hydraulic quick-dumping hoists. Two of these are in service.

The plant has a capacity of 350 cu-yd. per day and operates with a force of four workmen and a foreman. Arthur C. Avril, who founded the industry in Cincinnati, is president. Milton Bauer is vice-president and George H. Riehl is secretary and treasurer.



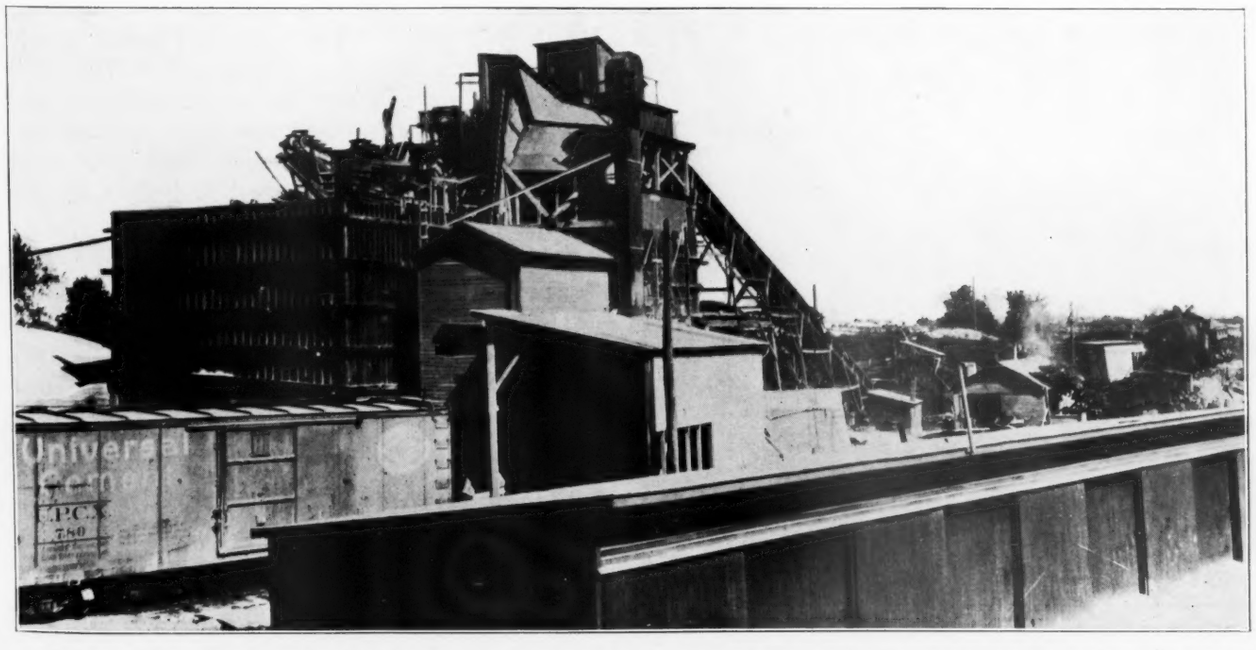
Weighing batchers for the 1-cu. yd. mixer at the Hoffman plant

Geo. J. Hoffman & Co.

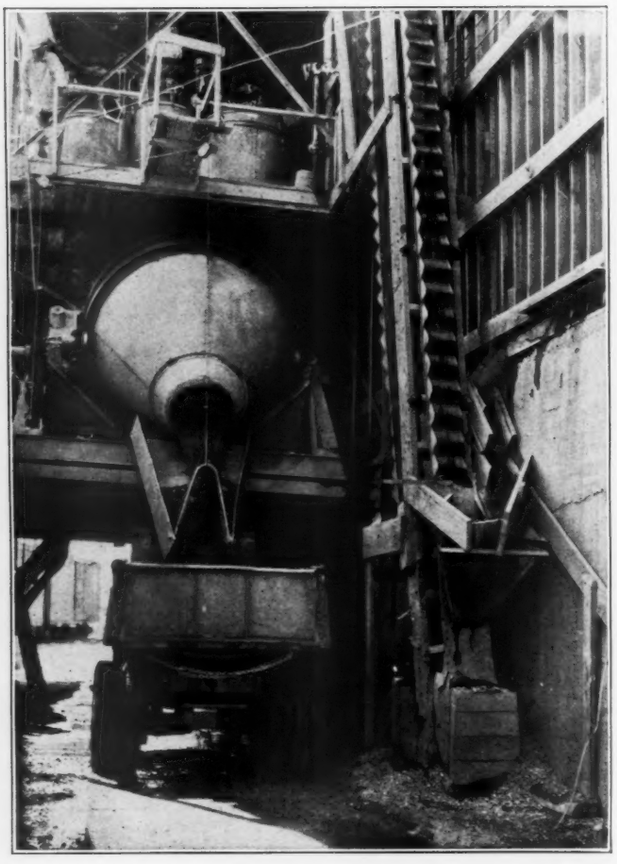
Two miles west of the business section of South Bend, Ind., Geo. J. Hoffman & Co. are operating a paying central-mixing plant in connection with a sand and gravel plant. The former has a capacity of 600 cu.yd. of concrete daily, while about 800 cu.yd. of sand and gravel can be produced. The complete story of the operations was told in PIT AND QUARRY for December 4.

The sand and gravel plant is of modern design and equipment. After the aggregates have been screened and washed, they are classified and stored in five wooden bins, two for sand and three for gravel. There are two tunnels underneath, one for loading cars and the other for trucks. The bins also supply aggregate to the central mixing plant, being arranged so that concrete sand, and either ¼-in. to 1-in. or ¼-in to 2-in. gravel can be used in the concrete mix. These sizes are chuted from the bins to a Weller belt-bucket conveyor which empties, through a split chute, to any of the four compartments of the 125-ton capacity steel bin above the mixing plant.

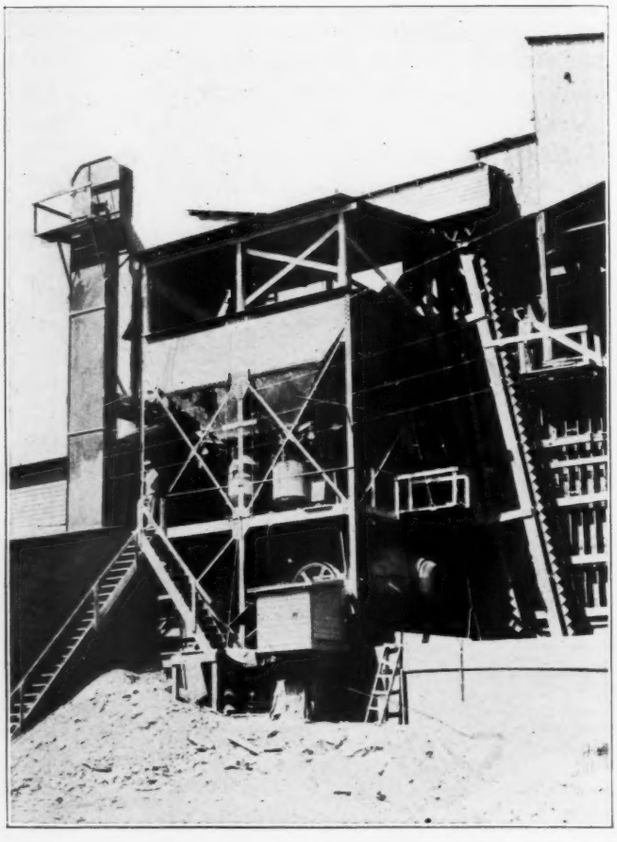
Bulk cement is carried from box cars to the fourth compartment of the bin by a screw conveyor, fed at the loading end by a Weller automatic scraper. The compartment has a capacity of only 65 bbl. and surplus cement is spouted to a 900-bbl. wooden storage house to be used as needed. The materials discharge by gravity from the bin into Johnson weighing batchers over the two mixers, the smaller one being a 1-cu.yd. Marsh-Capron and the larger a Smith 2-cu.yd. A Gardner-Denver single-cylinder compressor supplies air for agitating the cement as it leaves the bin. Each mixer has three batchers, one each for cement, sand and gravel. Mixing water is controlled by a company-designed tank and allowance for moisture in the sand is constantly made. A Koehring batchmeter controls the time of mixing, which is 2 minutes. The 2-cu.yd. mixer is



Hoffman plant from southeast. Garage and cement storehouse in foreground. Track hopper for gravel at right



Two-cu. yd. mixer discharging into truck at Hoffman plant. Sand and gravel elevator at right, batchers above



Another view of Hoffman plant with cement elevator at left and sand and gravel elevator at right

driven by a 40-hp. General Electric motor while a 20-hp. motor of the same make supplies power to the 1-cu.yd. mixer.

The concrete is loaded into trucks, which drive into a tunnel directly below the mixers. The trucks are hired and are of the steel-bodied dump type. Deliveries have been made as far as 16 miles from the mixing plant, most of the concrete being used for paving, although more than 6,000 cu.yd. were sold to the New York Central Lines last year for track elevations and for constructing a station. All of the concrete must meet the specifications for the job on which it is to be used, the slump test being the means of checking.

All conveyors used in the operations are Stephens-Adamson, with United States Rubber Company belting. Union Steam Pump Company centrifugal pumps supply water from an abandoned section of the gravel pit.

George J. Hoffman is president of Geo. H. Hoffman & Co. Other officers are H. H. Hoffman, vice-president; H. E. Boyer, secretary and treasurer and Wm. H. Sonseby, superintendent. John Kuert is production manager, as well as president and general manager of the Kuert Concrete Co., the separate corporation under which the central-mixing plant is owned and operated.

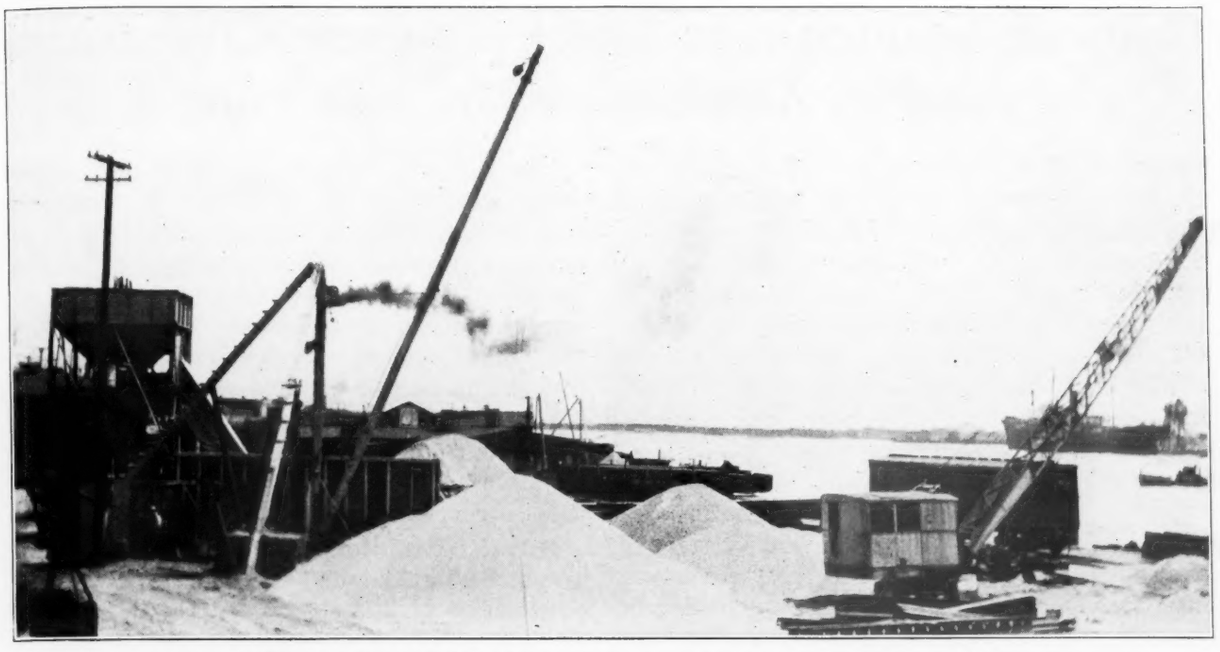
Mobile Ready Mixed Concrete Co., Inc.

The central concrete mixing plant of the Mobile Ready Mixed Concrete Co., Inc., was put in operation early this year, and is located but a short distance from the heart of Mobile, Ala. The plant is modern in design and construction and its output is used largely in building construction.

Sand and gravel is purchased from a material yard which adjoins the plant on the south. The material comes in on barges, being dredged up the Mobile river, on which the mixing plant is located. The sized gravel and sand are unloaded in stock piles by the material company and a stiff-leg timber derrick with a 70-ft. boom loads the material from the piles direct to the bin over the mixing plant. A ¾-cu.yd. Blaw-Knox clamshell bucket handles the aggregate.

The mixing plant building is of structural steel construction and a Blaw-Knox steel double bin, with a capacity of 102 tons, holds the sand and gravel. The bin compartments discharge into a Blaw-Knox double beam weighing-batcher, where the aggregate is weighed out, a Fairbanks scale registering the last 200 pounds on the dial.

Sacked cement is unloaded onto a 90-ft. Logan inclined gravity-conveyor from railroad cars which are switched in on a spur track. The cement is unloaded in a storehouse nearby. From the storehouse, an enclosed elevator lifts the sacks to the mixing platform. After the cement is emptied, the



Stiffleg derrick at Mobile plant. Crane for rehandling aggregate at right

sacks are chuted back to the storehouse, where they are shaken clean and baled.

The cement is measured into the mixer by hand, while the aggregate is discharged from the batchers through a chute. The mixer is a 1-cu.yd. Smith and is of the tilting type. After thorough mixing, the concrete is dumped into Indiana 1- and 2-ton steel body dump trucks, and delivery is made.

R. W. Greene, Jr., is general manager of the company and maintains an office near the plant.

Miscellaneous

The plants which have been reviewed above are only a few of the many which were described in PIT AND QUARRY during the year. In addition to these a comprehensive series of articles were published during the year on "Central Mixing Plants for the Manufacture and Sale of Ready-Mixed Concrete." These articles stressed the possibilities of the concrete central mixing plant for the aggregate producers and went into great detail on plant design, location and operation, and the distribution of the product. Costs were also given considerable space, including costs of construction, operation and distribution, and methods of cost accounting. This series of articles is probably the most complete compendium of information on this subject that has yet been gathered together. The various articles of the series appeared in PIT AND QUARRY as follows: April 24, page 73; May 8, page 69; June 5, page 79; and June 19, page 59.

Conveyor to cement shed. Truck being loaded with concrete at Mobile plant

Some Trainload!

As a means of visualizing the extent of development and building work in progress in the United States, it is estimated in figures compiled by the United States department of commerce that the amount of sand and gravel consumed in one year would load a train 45,000 miles in length.

"Magazine Full of Meat"

Albert Mines, Albert County, N. B., Can.

Editor PIT AND QUARRY.

Dear Sir:

It gives me great pleasure to be able to compliment you upon the quality of your issue of Nov. 20th just to hand.

Seldom have I read a magazine or journal so full of "meat." Information seldom made public without much research.

I send you my compliments. I am,

Yours truly,

(Signed) Louis Simpson.

Launch Campaign to Teach Concrete Contractors Modern Methods of Merchandising

TO PROMOTE a wider use of concrete, the Portland Cement Association has just started a comprehensive campaign in sales education with contractors. A series of conferences, which began last week, will continue during the coming year, and it is hoped that a large increase in business will result, not only to the contractor, but incidentally to sand and gravel operators, cement manufacturers, crushed-stone producers, and allied industries.

The conferences will be held in most of the important cities throughout the country, and are under the direction of W. D. M. Allan, manager of the cement products bureau of the Association. Three states are being covered in the opening of the conferences this month. Robert M. Smythe is conducting the gatherings in various Wisconsin cities. T. H. Merriam is the conference leader in Michigan, the first meeting having been held at Detroit on December 9. George F. Steigerwalt is arranging the meetings for December in Illinois. After the first of the year, Mr. Steigerwalt will conduct similar conferences in Indiana and Ohio. Mr. Merriam will hold a series of meetings in metropolitan New York and New Jersey, while Mr. Smythe will show contractors in Kentucky, Tennessee, Alabama, Georgia and the Carolinas how they can increase their business through improved merchandising methods.

In addition to the common market, such as sidewalks and basements, emphasis will be placed on increased business and greater profits that have come to contractors who have succeeded in getting the better types of concrete jobs, such as garden pools, tennis courts, park improvements, swimming pools and ornamental work. Concrete residence floors, as a new market for the contractor, will be presented. The need of applying modern merchandising methods to the concrete contracting business will be discussed at the conferences.

All contractors and material men are invited to attend the gatherings. Some interesting slants on modern methods of getting new business, as well as the creation of new markets, will be explained. The facts upon which the campaign is based were obtained at first hand by the men conducting the conferences, who called on more than 1,000 leading contractors in 12 states. How these contractors are solving their problems, developing new markets and increasing their business will be told to the profit of those who attend, whether they be contractors or supply men. Moving pictures and slides will be shown, illustrating the various selling points brought out at the meetings.

The men who will lead the discussions at these sales conferences will stress, among other things, the necessity for personal selling. They will point out that the construction industry can no longer afford to wait for business to fall into its lap. Modern competition is keener than ever before and if the sale of cement and the aggregates which go into the making of concrete are to keep pace with other building materials, those who produce these materials and those who use them in building construction must be ever on the alert as salesmen for these products.

Definite dates for the conferences have been arranged up to March 21 of next year. A list of the conferences to be held up to that date is given below. In most cases, the gatherings will be held in one of the hotels in the cities shown. Advance notices of the meetings will appear in the local newspapers, together with the time and place of meetings.

City	*Date*
Kalamazoo, Mich.	Dec. 19
Kenosha, Wis.	Dec. 20
East St. Louis, Ill.	Dec. 20
Evansville, Ind.	Jan. 6
South Bend, Ind.	Jan. 6
White Plains, N. Y.	Jan. 7
Louisville, Ky.	Jan. 8
Ft. Wayne, Ind.	Jan. 8
Nashville, Tenn.	Jan. 10
Indianapolis, Ind.	Jan. 10
Jamaica, N. Y.	Jan. 10
Chattanooga, Tenn.	Jan. 13
Columbus, O.	Jan. 14
Richmond, Va.	Jan. 14
Birmingham, Ala.	Jan. 16
Cincinnati, O.	Jan. 17
Hackensack, N. J.	Jan. 17
Atlanta, Ga.	Jan. 20
Dayton, O.	Jan. 20
Newark, N. J.	Jan. 21
Macon, Ga.	Jan. 22
Toledo, O.	Jan. 23
Savannah, Ga.	Jan. 24
New Brunswick, N. J.	Jan. 24
Columbia, S. C.	Jan. 27
Cleveland, O.	Jan. 27
Trenton, N. J.	Jan. 27
Charlotte, N. C.	Jan. 29
Akron, O.	Jan. 29
Camden, N. J.	Jan. 29
Greensboro, N. C.	Jan. 31
Youngstown, O.	Jan. 31
Atlantic City, N. J.	Jan. 31
Norfolk, Va.	Feb. 3
Binghamton, N. Y.	Feb. 4
Elmira, N. Y.	Feb. 6
Charleston, S. C.	Feb. 7
Erie, Pa.	Feb. 11
Pittsburgh, Pa.	Feb. 14
Memphis, Tenn.	Feb. 17
Harrisburg, Pa.	Feb. 17
Buffalo, N. Y.	Feb. 17
Little Rock, Ark.	Feb. 18
Lancaster, Pa.	Feb. 19
Rochester, N. Y.	Feb. 19
Reading, Pa.	Feb. 20
Jackson, Miss.	Feb. 21
Syracuse, N. Y.	Feb. 21
Washington, D. C.	Feb. 24
Albany, N. Y.	Feb. 24
Shreveport, La.	Feb. 25
Springfield, O.	Feb. 26
Baltimore, Md.	Feb. 27
New Orleans, La.	Feb. 28
Worcester, Mass.	Feb. 28
Beaumont, Tex.	Mar. 3
Wilmington, Del.	Mar. 3
Houston, Tex.	Mar. 5
Philadelphia, Pa.	Mar. 5, 6
Boston, Mass.	Mar. 6, 7
San Antonio, Tex.	Mar. 7
Allentown, Pa.	Mar. 10
New Bedford, Mass.	Mar. 10
Dallas, Tex.	Mar. 11
Fort Worth, Tex.	Mar. 12
Scranton, Pa.	Mar. 12
Providence, R. I.	Mar. 12
Tulsa, Okla.	Mar. 14
New Haven, Conn.	Mar. 14
Oklahoma City, Okla.	Mar. 17
Hartford, Conn.	Mar. 17
Wichita, Kans	Mar. 19
Bridgeport, Conn.	Mar. 19
Topeka, Kans.	Mar. 21

Optimistic Outlook for 1930 Seen As Empire State Sand and Gravel Men Convene at Rochester

Elect New Officers and Decide On Next Meeting

THE annual convention of the Empire State Sand and Gravel Producers' Association was held Thursday, Dec. 12, at the Sagamore Hotel, Rochester, N. Y. Despite the stormy, near-zero weather, a representative gathering of members and associate members attended. A large number of members of the state department of public works and others interested in sand and gravel affairs attended the dinner and were well repaid by an unusually interesting program.

The convention opened with a get-together conference in the morning, followed by an informal business meeting. Luncheon was held in the sun parlor on the roof of the hotel. John G. Carpenter, secretary and treasurer of the association, introduced a number of those present who gave brief addresses on subjects of general interest. This was followed by a round-table discussion which disclosed an optimistic attitude toward business prospects for 1930.

Following the luncheon the formal business meeting was held. Secretary Carpenter read the annual reports, financial and otherwise, which were approved by the members present.

C. W. Maxwell, new president

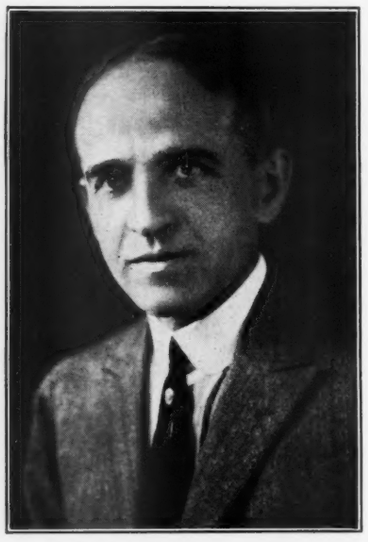
Henry F. Marsh, outgoing president

Officers were then elected for the coming year. C. W. Maxwell, outgoing vice-president, was elected president, succeeding Henry F. Marsh. H. O. Seilley was elected vice-president, and John G. Carpenter was reelected secretary and treasurer. All elections were unanimous.

It was then decided that the next meeting be held in Syracuse some time in March, the exact date to be announced later by the secretary.

The dinner given at the Rochester Club in the evening was well attended and the program following was well received. Ex-president Marsh introduced the speakers. George E. Schaefer, former president of the state crushed stone association, discussed the common interests of the two associations, emphasizing the advantages to be gained through cooperation. Frank M. Welch then extended greetings from the Ohio Sand and Gravel Association.

G. K. Smith, one of the pioneer sand and gravel producers in New York state, in his characteristic manner introduced Col. Wm. M. Acheson, state



John A. Carpenter, re-elected secretary and treasurer

engineer, one of the principal speakers of the evening. Col Acheson gave a comprehensive history of the development of concrete roads, especially as related to the use of sand and gravel. He also told of the efforts made by the state in educating producers to turn out the best product possible. He then briefly outlined the huge building program which the state has scheduled for the coming year and emphasized the important part sand and gravel will have in this program. Col. Acheson's talk aroused considerable discussion and he answered many questions on this subject.

Mr. Marsh then introduced Frank P. McKibben, former dean of engineering at Union College and one of the leading authorities on bridge design in this country. Mr. McKibben traced the development of bridge construction from the days of the Roman empire to the present, describing the various types including those now in use. His subject was most interesting and was well received by those present. The convention was then adjourned with many planning to renew acquaintanceships at the convention of the National Sand and Gravel Association to be held at Memphis, Tenn., in January.

Several equipment manufacturers had exhibits of their products which attracted considerable attention. Descriptions of these exhibits follow:

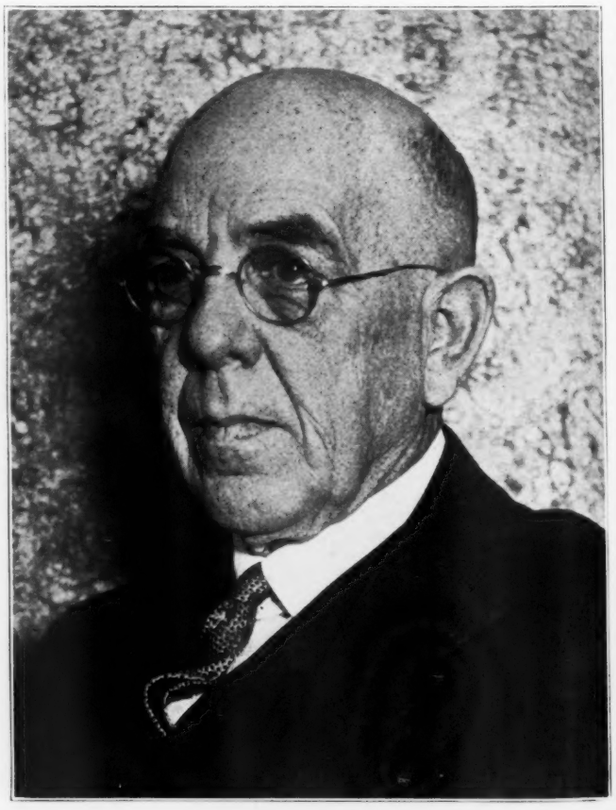
The Morris Machine Works.—A complete set of booklets describing the pumps, dredges, and other equipment made by this company and an album of photographs showing various installations made in the sand and gravel field. Among these was a recently developed two-section steel dredge hull. V. J. Milkowski, chief engineer, dredge department, was in charge.

The New Jersey Wire Cloth Company.—A complete layout of all types and sizes of long-mesh, square-mesh, and double-locked plain and manganese-steel wire cloth ranging from 24-mesh to 2½-in. B. J. Fisher, manager of the New York City office, and Wm. Henderson, Rochester representative, were in attendance.

C. A. Adams, New York state representative for the Allen Cone Co., Cross Engineering Co., Atlas Car and Const. Co., Kennedy-Van Saun Mfg. and Eng. Corp., Fairfield Engineering Co., F. M. Welch Engineering Service, and the Wheeling Mold and Foundry Co., showed complete sets of photographs and booklets describing the products of these several companies.

Registration

Acheson, Wm. M., state engineer, Albany N. Y.
Adams, C. A., Cross Engineering Co. and General Gravel Plant Equip. Co., Rotterdam Jct., N. Y.
Bell, Howard, Rib-Stone Concrete Corp., Le Roy, N. Y.
Bender, G. A., Scranton, Pa.
Brotsch, R. C., Consolidated Mat. Corp., Rochester, N. Y.
Butler, H. W., Whitmore, Rauber and Vicenus, Rochester, N. Y.
Campbell, C. J., Rochester, N. Y.
Carpenter, J. G., Madison Sand and Gravel Corp., Hamilton, N. Y.
Carpenter, J. C., Madison Sand and Gravel Corp., Binghamton, N. Y.
Crofts, A. L., Rochester Gas and Electric Corporation, Rochester, N. Y.
Fielding, A. E., Niagara Concrete Mixer Co., Buffalo, N. Y.
Flynn, W. A., Valley Sand and Gravel Corp., Rochester, N. Y.
Fisher, B. J., New Jersey Wire Cloth Co., New York, N. Y.
Franz, John, Buffalo Slag Co., Attica, N. Y.
Greenberg, Max, Rochester, N. Y.
Harsh, E. C., *Rock Products*, Chicago, Ill.
Henderson, Wm., New Jersey Wire Cloth Co., Rochester, N. Y.
Howe, Henry L., Dept. of Public Works, Rochester, N. Y.
Kelley, James E., Dept. of Public Works, Rochester, N. Y.
Larsen, John P., Dept. of Public Works, Rochester, N. Y.
Line, Fred C., Rochester, N. Y.



G. K. Smith, pioneer sand and gravel producer and a charter member of the association

Lucas, B. G., Valley Sand and Gravel Corp., Rochester, N. Y.
Marsh, Henry F., Consolidated Mat. Corp., Rochester, N. Y.
Maxwell, C. W., Albany Gravel Co., Albany, N. Y.
McKibben, F. P., consulting engineer, Black Gap, Pa.
Mearth, Oscar, Dept. of Public Works, Rochester, N. Y.
Michael, H. L., Dept. of Public Works, Rochester, N. Y.
Milkowski, V. J., Morris Machine Works, Baldwinsville, N. Y.
Miller, Geo. G., Dept. of Public Works, Rochester, N. Y.
Nicol, W. S., Cross Engineering Co., Carbondale, Pa.
Oaks, C. V., Nathan Oaks & Sons, Oaks Corners, N. Y.
Oaks, Nathan, Nathan Oaks & Sons, Oaks Corners, N. Y.
Odenbach, John H., Dolomite Products Co., Rochester, N. Y.
Oliver, E. L., Rochester, N. Y.
Peck, O. C., State Line Sand and Gravel Co., Scranton, Pa.
Pope, E. F., Rochester, N. Y.
Rauber, John E., Whitmore, Rauber and Vicenus, Rochester, N. Y.
Redden, W. J., Rochester, N. Y.
Reichenberger, F. J.
Robinson, J. W., Eldridge and Robinson, Auburn, N. Y.
Searls, Glenn, Dept. of Public Works, Rochester, N. Y.
Schaefer, Geo. E., General Crushed Stone Co., Rochester, N. Y.
Smith, G. K., Albany Gravel Co., Albany, N. Y.
Stelley, H. O., Buffalo Gravel Corp., Buffalo, N. Y.
Storey, H. W., Valley Sand and Gravel Corp., Rochester, N. Y.
Taylor, John, Valley Sand and Gravel Corp., Rochester, N. Y.
Trauffer, W. E., PIT AND QUARRY, Chicago, Ill.
Vickery, H. W., Buffalo Slag Co., Buffalo, N. Y.
Welch, F. M., F. M. Welch Engineering Service, Greenville, O.
Wicker, C. S., Buffalo Slag Co., Buffalo, N. Y.
Wicker, Harold, Buffalo Slag Co., Buffalo, N. Y.
Yarrington, S. K., Hendrick Mfg. Co., Carbondale, Pa.

New York Rock Breakers to Hold Annual Meeting

The annual meeting of the New York State Crushed Stone Association will be held December 20, 1929, at Hotel Syracuse, Syracuse, N. Y. According to a special notice prepared by Secretary A. S. Owens, the members should attend:

1. To hear the report of the committee on lien law revision.

2. To hear Otho Graves tell us how good we will have to be to qualify as ethical stone breakers.

3. To find out how to go to the annual convention of the National Crushed Stone Association.

4. To be on hand to share in pre-election bribe money which will be freely offered by prospective candidates for offices for 1930.

5. So that members who have been coming regularly to meetings will know that you are a member.

6. So that you can pay your dues to the secretary, if you have not already done so. Let your conscience be your guide as the salary of the secretary is in arrears and he needs the money to buy a Christmas present for his wife.

7. To see moving pictures of scenes from previous meetings now immortalized by the all-seeing eye of our president's movie camera and, for the first time released on the screen. These pictures will be of great interest and, during the showing, the following will be played in both hard and soft music by Sousa's Band and Walter Damrosch's Orchestra: "Hearts and Flowers," "Hail, Hail, the Gang's All Here," "Chopin's Funeral March," and "We Won't Go Home Until Morning." The song theme will be "Old Bill McGrew He Aint What He Used to Be Many Long Years Ago."

"A wad some power the giftie gie us
To sae ourselves as ithers sae us."

The president wishes me to emphasize the fact that this may be a long meeting and will not be adjourned until all scheduled business and entertainment is concluded, so notify your wife that she had better put out the cat and wind the clock and "Let the dog be your furnace man" if you do not get home until late that night or the next morning.

Estimates on Expenditures for Highways During 1930

The American Road Builders' Association recently collected data from the various states covering expenditures for construction during 1929 and the proposed expenditures for highway and bridge construction during 1930. In many states the disbursements for next year will be close to those for this year. The gross figures for the two years are: 1929, $591,520,000; 1930, $629,000,000.

During 1929, Pennsylvania expended $44,000,000 on public roads and proposes to spend a like amount next year, New York spent $40,000,000 in 1929 but expects to spend $62,000,000 in 1930. With the exception of Mississippi, whose figures are nil for both years, the minimum proposed 1930 expenditure is $1,500,000 by Delaware.

Feldspar Grinders to Hold Meeting and Conference at Washington

The Feldspar Grinders' Institute, which held its annual meeting at Atlantic City, November 22 and 23, is planning a conference to be held at the office of the Bureau of Standards, Washington, D. C., on January 14, 1930. The purpose of this conference is to discuss the standardization of grades of felspar, mesh and standard method of test. All engaged in the feldspar, glass and ceramic industries and any others interested are invited. The next meeting of the Institute will be held on January 15, the day following the Bureau of Standards meeting, also at Washington.

Past Year Sees Many New Self-unloading Boats Built for Transportation of Bulk Materials

Use of These Boats for Handling Bulk Cement Is the Outstanding Feature

THE most marked feature in the development of self-unloading boats during the past year was the large number of new boats put into operation for the handling of bulk cement. The number of boats built to handle other non-metallic minerals, such as crushed stone, sand and gravel, gypsum, coal, etc., again increased at about the same steady rate as during the past few years.

Self-unloading boats and barges for hauling bulk cement are now being used on the Mississippi river, the Great Lakes, the St. Lawrence river and along the Atlantic Coast. Plans are also being made for similar operations on the Pacific Coast. Self-unloading boats for the handling of materials other than cement are confined largely to the Great Lakes although a few are operated at other points.

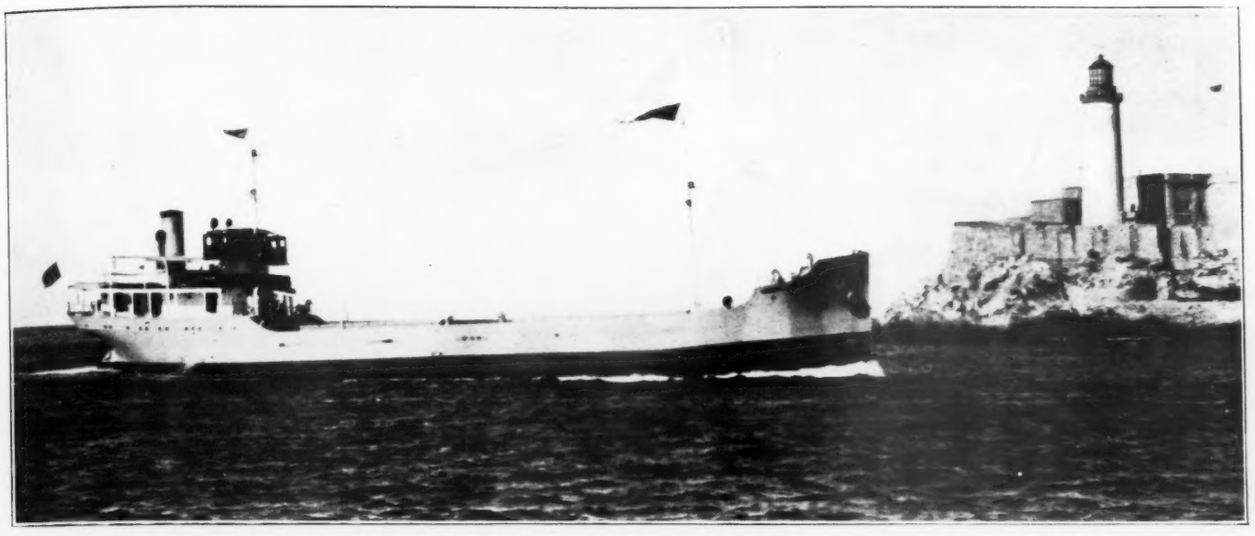
The Self-Unloading Cement Barges of the Marquette Cement Mfg. Co.

The new bulk-cement transporting self-unloading barges of the Marquette Cement Manufacturing Company are the first of this type to operate on the Mississippi river or any other inland waterway. Four of these barges went into operation this year, transporting bulk cement from the plant at Cape Girardeau, Mo., to the new storage and packing plants at Memphis, Tenn., and St. Louis, Mo. The barges, which have a capacity of 800 tons each, were designed by T. R. Tarn, naval architect, and were built by the Riter-Conley Company.

The barges are of all-steel construction, 175 ft. long by 35 ft. wide and 8 ft. deep, greatly resembling a standard river barge in outward appearance. The storage space consists of three longitudinal hopper bottom bins running the entire length of the barge between the end bulkheads. The end rakes are water-tight compartments and act as collision bulkheads. There are also wing bulkheads on each side of the barge, running its entire length. These are each divided into six water-tight compartments. All seams and joints on the barges are welded to insure water-tightness and every precaution has been taken to prevent spray and wave wash from entering the hoppers and damaging the cargo.

The barges are loaded at Cape Girardeau from special bulk cement hopper cars having a capacity of 400 bbls. each. These are loaded at the plant by a 6-in. Fuller-Kinyon pumping system and hauled a distance of one-half mile from the plant to the river dock. Here the cars are connected to another 6-in. Fuller-Kinyon pump which loads the various compartments in the barge through a system of pipes and valves on the deck of the barge. A longitudinal screw conveyor under each car feeds the cement to the pumping system. The dock is also

Some of the self-unloading bulk cement barges operated by the Marquette Cement Mfg. Co. on the Mississippi river

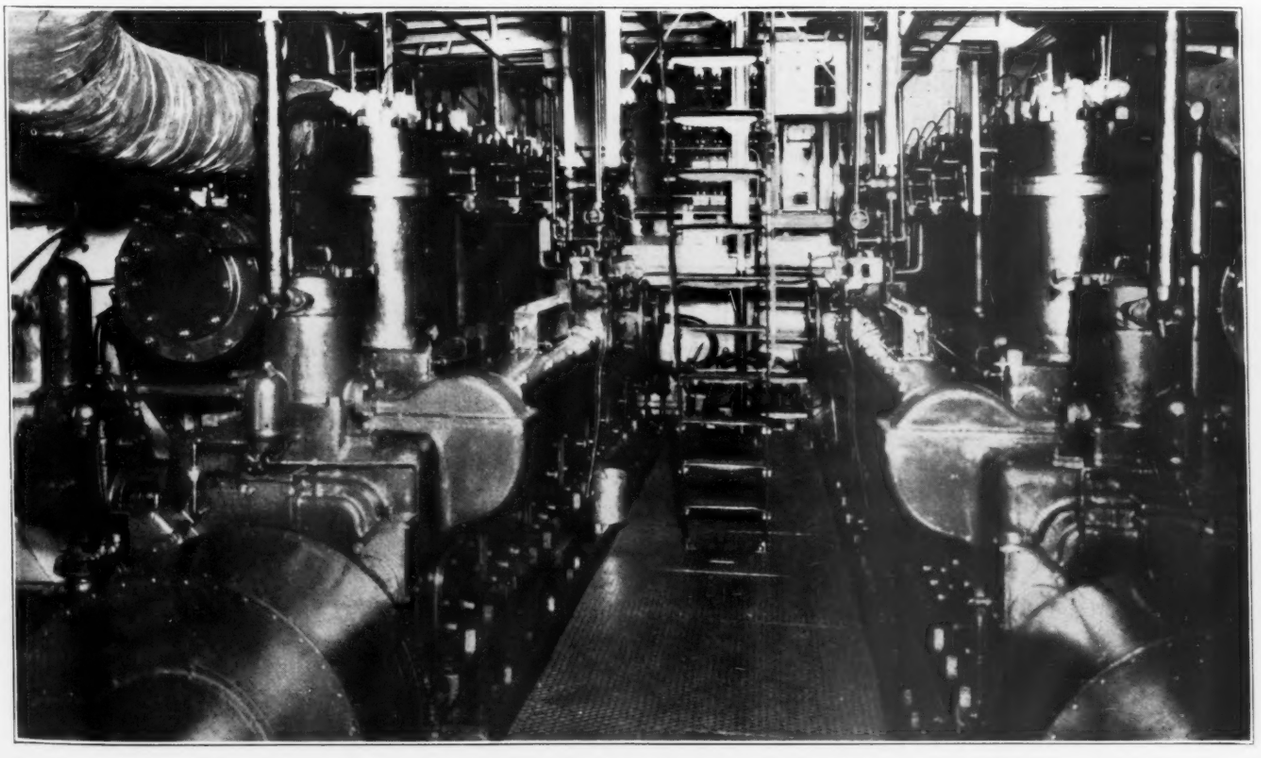


The International Cement Corporation's self-unloading cement tank ship entering the harbor at Havana, Cuba. Historic Morro Castle is at the right

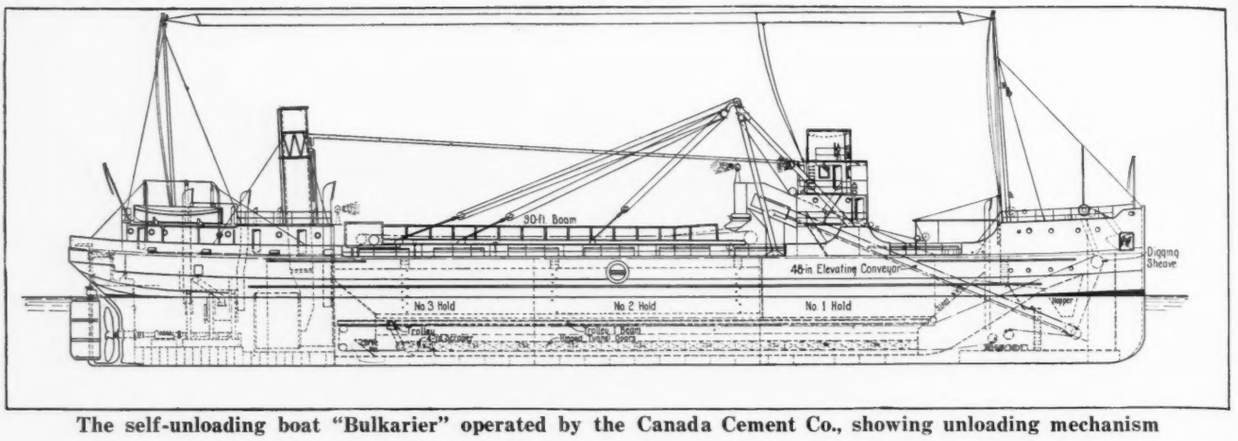
equipped to handle sacked cement, a good deal of which is shipped on ordinary barges for use at various points along the river.

The self-unloading barges are pushed, one at a time, to one of the two new distributing plants at Memphis or St. Louis. A chartered 300-hp. steam towboat is now being used but a new 800-hp. diesel-driven towboat has been designed by Mr. Tarn and will be built during the coming winter. This will be able to push two or three barges upstream at one time. The system of hauling has been planned so that all equipment and the towboat are kept in operation all of the time with no delays to run up operating costs. One barge is being loaded while two other barges are being unloaded at Memphis and St. Louis and the fourth is enroute to one or the other of the terminals.

The unloading mechanism on each barge is extremely simple. Six 9-in. screw conveyors, extending the entire length of each hopper to the center of the hold, discharge into a 12-in. cross conveyor. Each of the six conveyors is individually driven by a 7½-hp. electric motor through a James herringbone speed reducer. The cross conveyor is a single unit driven by a 5-hp. electric motor through a similar speed reducer. This conveyor has right-hand



Engine room of the "Holgan Struckmann," showing the two 400-hp. diesel engines



The self-unloading boat "Bulkarier" operated by the Canada Cement Co., showing unloading mechanism

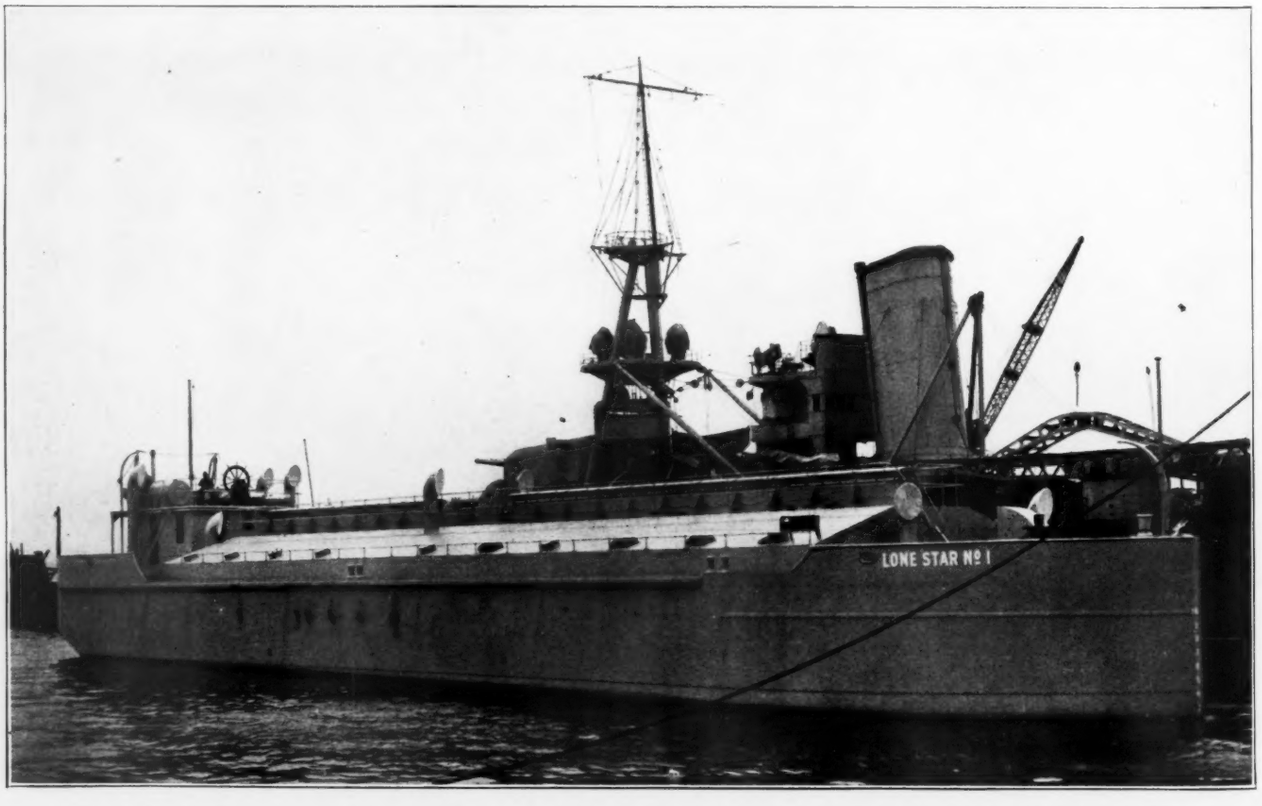
flights on one half and left-hand on the other half discharging at its center to a 6-in. Fuller-Kinyon pump. No trouble is experienced in keeping the bins clean as the lack of depth keeps the cement from packing.

The pump discharges through a pipe line to either side of the barge for unloading at the terminals, attaching to the shore line by means of a flexible connection. Electric power for the motors, compressed air for the Fuller-Kinyon pump and electric light current are also obtained from shore lines.

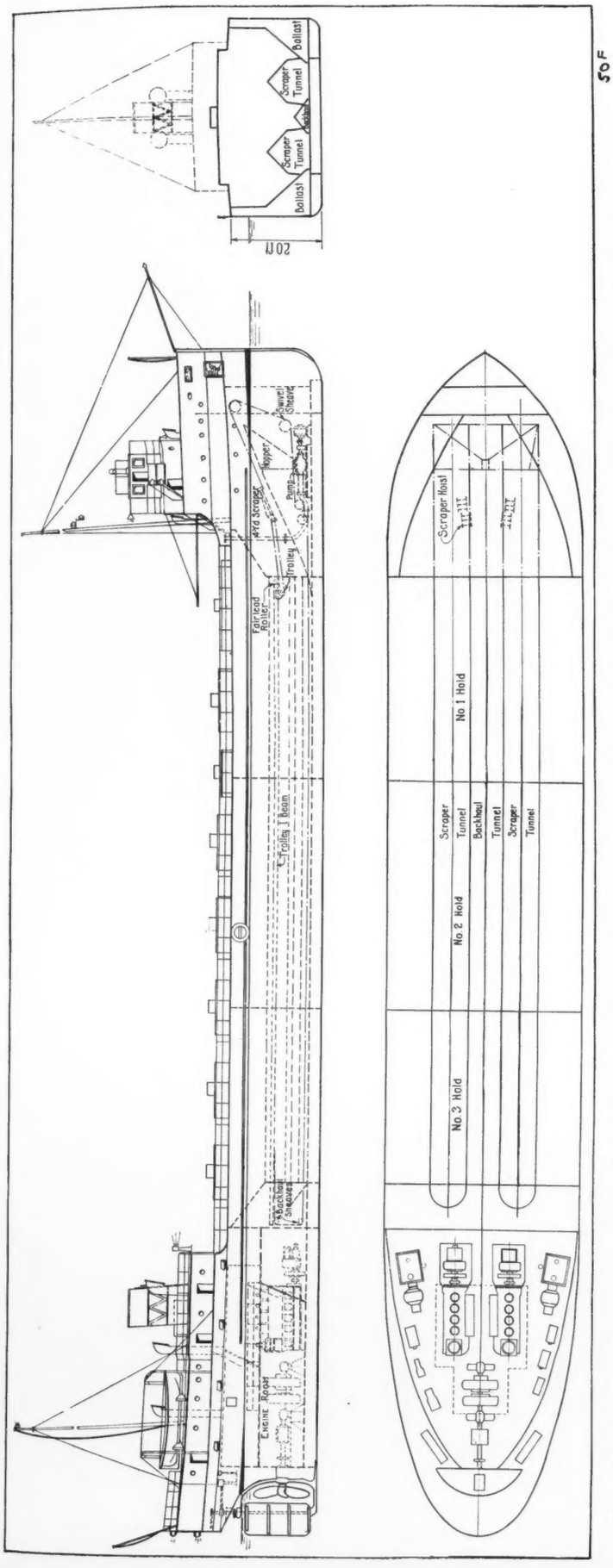
International Cement Corporation's Two Self-Unloading Cement Boats

The International Cement Corporation was the first on the Atlantic Coast to haul bulk cement in an all-steel self-unloading barge. This barge, the *Lone Star No. 1,* is 163 ft. long, with a beam of 37 ft. 4 in. and a total capacity of 5,600 bbl. of cement. It was built by the New York Shipbuilding Company for the Lone Star Cement Company of Virginia, Inc., and was launched on September 30 at Camden, N. J. It is being used to transport bulk cement from the company's mill at South Norfolk, Va., to the new storage and packing plant at Washington, D. C.

Since the time the barge *Lone Star No. 1* was launched, the International Cement Corporation has put into operation another boat for the transportation of bulk cement. This boat, the *Holgan Struckmann,* was built at Aalborg, Denmark, and carries the cement in seven specially designed tanks of 200-ton capacity each, which will be unloaded by means of suction pumps. Two 6-cylinder



The self-unloading cement barge operated by the Lone Star Cement Co. of Virginia along the Atlantic coast



The self-unloading cement boat "Cement Carrier" now under construction for the Canada Cement Co. Note the pumping system which replaces the conveyors ordinarily used in this type of boat

Fairbanks-Morse diesel engines with a total of 800 hp. give the boat a top speed of 11 knots per hour. This boat is operating between Cuban ports. It is the first self-unloading sea-going cement-tank ship.

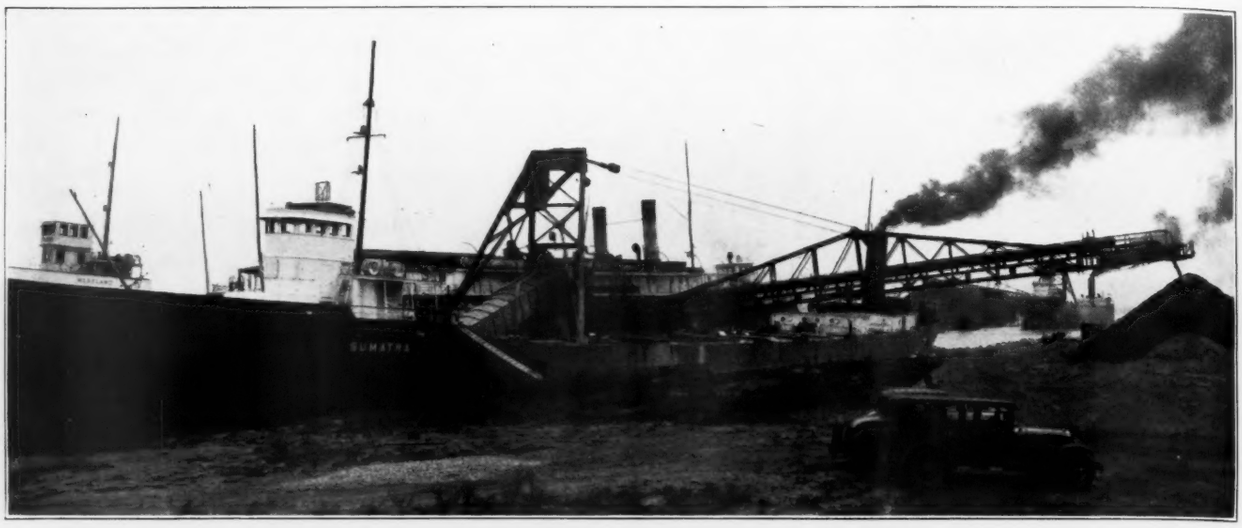
New Leathem D. Smith Boats

Leathem D. Smith installed his unloading system in five boats during the year and has one more under construction. Three of these are new boats and three are rebuilt cargo boats. The new boats now in operation are the *Bulkarier,* owned by the Canada Cement Company of Montreal, and the *Material Service,* operated by the Material Service Corporation of Chicago. The boat under construction, the *Cement Carrier,* also is being built for the Canada Cement Company.

The *Bulkarier* was built by the Furness Shipbuilding Company of Haverton Hill-On-Tees, England. It is 260 ft. long with a 43-ft. beam and a capacity of 3,000 tons and is driven by triple expansion steam engines of 900 hp. which give the boat a speed of 10 knots per hour. The hold is divided into three longitudinal compartments which are loaded with cement by a Fuller-Kinyon pump on shore. Two 6-cu.yd. Crescent scrapers operate in two tunnels under the compartments. These feed a conveyor to a 90-ft. boom conveyor on deck for unloading. The system is similar to that used in other Leathem D. Smith boats. This boat is being used to haul cement, gypsum and coal.

The *Cement Carrier* is now being built for the same company as the *Bulkarier,* and will handle only bulk cement. She will be 253 ft. long with a 43-ft. beam, a draft of 16 ft. fully loaded, and will carry a cargo of 2,000 tons on a 12-ft. draft. Two 4-cu.yd. Crescent scrapers will feed a 10-in. Fuller-Kinyon pump which will unload the boat. Drive is to be diesel-electric. Because of her light draft she will be able to operate on the recently completed Welland Canal between the Canada Cement Company's plant at Belleville, Ontario, and Toronto.

The *Material Service,* which has received a great deal of publicity since it went into operation last spring, was designed to operate between the Lockport, Ill., sand and gravel plant and the

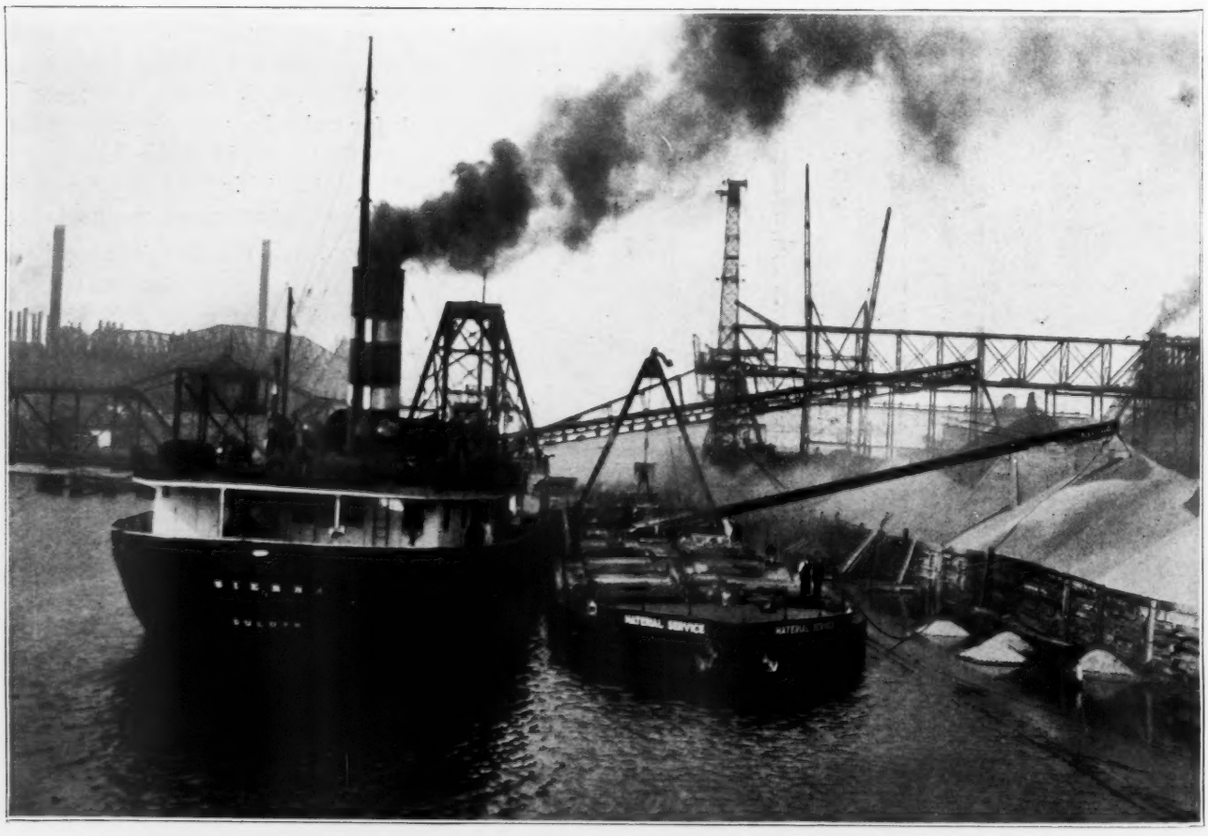


The "Sumatra" discharging a load

Chicago yards of the Material Service Corporation. This boat is 246 ft. long with a 40-ft beam and will carry 2,500 tons on 12-ft. draft. Drive is through twin screws, diesel-driven, which give the boat a speed of 10 m.p.h. loaded. The patented Smith unloading system is used with two 4-cu.yd. Crescent scrapers feeding an inclined conveyor to the 90-ft. boom conveyor. The special feature of the boat is its ability to partially submerge by filling its water ballast tanks while unloading its cargo, keeping the clearance of the boat at a maximum of 12 ft. This enables it to go under all the Chicago city bridges. When another cargo is taken on the water is pumped out.

The three boats converted into self-unloaders by Leathem D. Smith during the year are the *Sumatra* and the *Sierra*, owned by G. A. Tomlinson of Cleveland, O., and the *Brandon*, owned by D. Sullivan and Company of Chicago. All operate on the same principle as previous Smith boats, using Crescent scrapers and conveyors.

The *Sierra* is 483 ft. long with a 52-ft. beam and has a capacity of 8,000 tons. Two 10-cu.yd. scrapers give a high unloading speed. Sand and stone are



The "Material Service" and the "Sierra" unloading at the same time without interference

Closeup showing the unloading merchanism on the "Brandon"

hauled. The *Sumatra* is a boat of similar type with a cargo capacity of 6,500 tons. Stone, sand, coal and bulk cement are hauled. The *Brandon* has a capacity of 3,000 tons and hauls mostly crushed stone.

Hercules Self-Unloading Car-Ferry Now Under Construction

The Hercules Cement Corporation, which for some time has been using a special type of bulk cement railroad car, has now under construction a car-ferry or barge for handling a number of these cars. The cars will be unloaded by collector screws alongside of the cars which will deliver at the end of the ferry to a Fuller-Kinyon pump. This will pump the cement to the unloading station. The car-ferry will operate in New York Harbor and the territory immediately adjacent.

Complete Arrangements for 15 Regional Cement Safety Meetings

Final arrangements for the 15 regional safety meetings, to be held during 1930 by the accident prevention and insurance bureau of the Portland Cement Association, have been completed. The dates and cities where the meetings are to be held were announced by PIT AND QUARRY for the first time in the issue of December 4.

The opening gun of the series will be fired on Wednesday, January 22, at Birmingham, Ala., when representatives of cement mills in that section gather at the Tutwiler Hotel. H. O. Underhill, superintendent of the Birmingham plant of the Alpha Portland Cement Company, will be the general chairman. F. E. Cash will represent the U. S. Bureau of Mines at the meeting. R. M. Thigpen, of the Alabama Insurance Commission, will also be present and will cooperate in making the meeting a success. Mills which are expected to send representatives to the meeting are: Lone Star Cement Co., Alabama—Birmingham and Spocari, Ala.; Lone Star Cement Co. Louisiana—New Orleans, La.; Pennsylvania-Dixie Cement Corp.—Richard City, Tenn.; Clinchfield, Ga., and Kingsport, Tenn.; Lehigh Portland Cement Co.—Birmingham; Alpha Portland Cement Co.—Birmingham; Atlas Portland Cement Co.—Leeds, Ala.; Florida Portland Cement Co.—Tampa, Fla.; and Southern States Cement Co.—Rockmart, Ga.

The Baker Hotel at Dallas, Tex., will be the scene of the second meeting of the series on Tuesday, February 4. The general chairman at this meeting will be Lewis R. Ferguson, vice-president and general manager of the Lone Star Cement Co. Texas, of Dallas. A first-aid contest will be one of the highlights on the program. The morning session will begin at 10 o'clock, with adjournment for luncheon at noon. The sessions will be resumed at 2 p. m. and will continue until evening, when the third annual safety dinner will take place in the ballroom of the hotel. Texas mills who will send delegates include the following: The Atlas Portland Cement Co.—Waco plant; Lone Star Cement Co. Texas—Dallas and Houston plants; Republic Portland Cement Co.—San Antonio plant; San Antonio Portland Cement Co.—San Antonio plant; Southwestern Portland Cement Co.—El Paso plant; Trinity Portland Cement Co.—Dallas, Fort Worth and Houston.

Two other meetings are scheduled for February. On February 11, at the Hotel Gibson in Cincinnati, W. W. Hamilton, safety director of the Alpha Portland Cement Co. at Easton, Pa., will be general chairman, and participating plants will include the following: Alpha Portland Cement Co.—Ironton, O., and Manheim, W. Va.; Kosmos Portland Cement Co.—Kosmosdale, Ky.; Lehigh Portland Cement Co.—Mitchell, Ind.; Lone Star Cement Co. Indiana—Greencastle, Ind.; Louisville Cement Co.—Speed, Ind.; Southwestern Portland Cement Co.—Osborn, O.; Wellston Iron Furnace Co.—Wellston, O.; and Wabash Portland Cement Co.—Osborn, O.

The St. Louis plants of the Alpha Portland Cement Co. and the Missouri Portland Cement Co., the Cape Girardeau and Hannibal plants of the Marquette Cement Manufacturing Co. and the Atlas Portland Cement Co., respectively, will be represented at the St. Louis meeting on February 25. Hiram Norcross, vice-president and general manager of the Missouri Portland Cement Co., will serve as chairman.

Henry McClarnan, general superintendent of the Alpha Portland Cement Company's Mill at LaSalle, Ill., will be the Chairman at the Illinois regional meeting, which will be held, as in previous years, at the Hotel Kaskaskia at LaSalle, Ill. C. A. Herbert will represent the U. S. Bureau of Mines.

Each meeting of the year will be graced with the presence of a bureau of Mine representative.

The Construction Outlook For 1930

By B. F. AFFLECK
President, Universal Portland Cement Co.

WITH the total volume of construction in 1929 dropping an estimated 10 per cent as compared with 1928; with total shipments of cement for the first 10 months of the year less than last year; with plants able to produce much more cement than is being shipped; with nearly 80 per cent of all American cement in competitive seaboard markets sold at a loss because of the importation of duty-free foreign cement; with many other cement manufacturers throughout the country selling on narrow margins or at a loss and with echoes of the stock market collapse still ringing in our ears, a bearish attitude toward 1930 might be expected if one made only a superficial inquiry into conditions.

B. F. Affleck

A more careful analysis, however, coupled with the views of many authorities, indicates that construction in 1930 may equal or show a moderate increase over 1929 even though it may not measure up to the record year of 1928, and that consumption of cement will bear about the same ratio to construction trends as it has in the past. Whether the unsatisfactory conditions now existing in the industry itself, however, will be improved during 1930 will depend on the elimination of uneconomical distribution and bad selling practices so that manufacturers can be assured a reasonable profit, on a better balance between demand and productive capacity and on tariff protection to help equalize manufacturing and labor costs between the foreign and the American product.

That 1930 should be a good construction year seems indicated by four things: (1) Construction is needed; (2) Financing for it is at hand or is becoming increasingly available; (3) Business conditions are fundamentally sound in spite of the stock market development; and (4) A substantial volume of construction already has been publicity pledged by responsible industrial and business leaders.

The need for construction in various fields is apparent. While some sections may be adequately built up in certain classifications, they may be underbuilt in other classifications. Taking the country as a whole, the normal need for construction, which could not be fully met this year because of difficulty in securing financing, remains to be satisfied together with new demands created by increasing population and by the obsolescence of older structures.

Activity in the residential field, for example, dropped over three-quarters of a billion dollars, or 28 per cent, this year, as compared with 1928, estimates of the Dodge Corporation show. Residential building should increase appreciably in 1930 in the opinion of Thomas S. Holden, vice-president of that company. Chicago offers an example of what may exist in many other communities. The normal vacancy in residences and small stores in this city is about 10 per cent, according to the Chicago Real Estate Board. In 1929 the vacancy had fallen to 4.7 per cent, according to a survey completed in December by Chicago postal authorities and reported in the *Chicago Tribune* on December 2.

A need for construction similarly exists in the paving field. With production of automobiles reaching about four million units a year and with highways and streets inadequate to serve the rapidly increasing number of passenger cars and trucks, the need for more and wider thoroughfares, for grade separations and similar improvements yearly becomes more acute. This need finds recognition in enlarging programs of paving. "Road work in 1930 reported by 42 states will amount to 668 million dollars, which is 76 millions more than 1929," reports *Engineering News-Record* on November 28 after making a country-wide survey. "This means that the approximate total of two billion dollars annual road and street construction will easily be maintained."

More Capital Available

Construction in 1930 likewise should be aided by greater availability of capital. Authorities agree that building this year was hampered by the diversion into the stock market at high interest rates of funds that ordinarily would have been used for construction. The *Business Week* on November 2 expressed the view that the decline of building this year "is probably due altogether to the temporary influence of high money rates for financing certain kinds of construction, not to any real excess in building." In its issue of November 28, *Engineer-*

ing News-Record reports that "immediately after the (stock market) drop, opinion was unanimous that the reaction would be favorable to the construction industry. Interest rates previously had risen to levels that made economical financing of construction difficult," the article states, "and the collapse of the call money market was expected to release funds for capital investment. This view is borne out by recent developments."

While interest rates have dropped and while the bond market has improved, it naturally will take time for financial conditions affecting construction to adjust themselves. That gradual improvement will continue and that a normal financial situation may be anticipated in the early months of 1930 appears to be the view of most authorities.

The belief that 1930 may be a good year is based also on the fact that business conditions are fundamentally sound. While some lines may have been unfavorably affected by the stock market crash, business as a whole is stable. Persons who assume that because there was business depression following the financial panic of 1919, there must also be one in the wake of the recent collapse, apparently ignore the differences in business conditions between the two periods.

These fundamental differences and the adjustments that are essential to insure construction activity have been so lucidly stated by Mr. Holden that they are summarized here: "(1) In 1919 the bond market had to turn upward. This happened seven months after the stock market break; in 1929 the bond market turned up just before the stock market break. This adjustment has been made.

"(2) In 1919 interest rates on time money had to reach their peak and turn down. This happened 11 months after the stock market break; in 1929 time money passed its peak and turned down shortly before the stock market break. This adjustment has been made.

"(3) In 1919 the New York Federal Reserve rediscount rate had to reach a peak and turn down. It rose to 7 per cent seven months after the stock market break and dropped to 6½ per cent 18 months after the stock market break; in 1929 the rediscount rate was increased to 6 per cent three months before the stock market break, reduced to 5 per cent on October 31 and to 4½ per cent on November 14. This adjustment has been made.

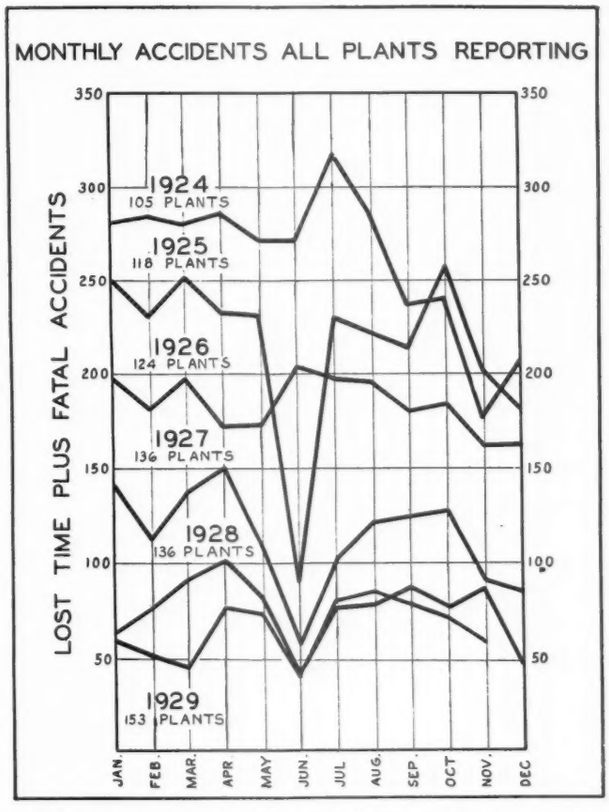
"(4) In 1919 general commodity prices, which were inflated, had to reach a peak and turn down. This happened eight months after the stock market break; in 1929 general commodity prices had not been inflated but had been declining 12 months when the stock market collapsed. No adjustment is called for.

"(5) In 1919 building costs had sky-rocketed. They had to reach a peak and turn down. This happened seven months after the stock market break; in 1929 building costs have remained practically stable since 1923 and no adjustment is called for.

"(6) In 1919 the most important decisions to build new projects rested with corporations and lending institutions whose resources, credit and confidence were considerably impaired; in 1929 the most important decisions to build rest with corporations and lending institutions whose financial stability, credit, resources and confidence in the economic progress of the country are greater than ever before."

Accidents in Cement Industry Continue To Be Reduced

Accidents in the cement industry were fewer by 100 for the first eleven months of this year than in 1928, according to official figures just compiled by the bureau of accident prevention and insurance of the Portland Cement Association.



There were only 59 lost time accidents during November—the lowest number in that month since 1924, when records were first compiled. The total number of mishaps to December 1 is 765, as against 865 last year, 1,291 for the year 1927 and 2,056 in 1926. The accompanying chart shows the accident trend, month by month, for the last six years.

Granite Manufacturers Meet

Granite manufacturers met at Quincy, Mass., on the evening of Dec. 12 for their annual banquet. A. E. Settimelli was in charge of the program.

Survey Indicates Many Producers Plan to Increase Plant Production During 1930

PROSPECTS for plant extension next year appear bright in many sections of the country, according to a comprehensive survey just completed by PIT AND QUARRY. Greatest activity along this line will be in Illinois, Pennsylvania, New York and Ohio, the survey indicates. Many plants in these states are looking for improved business conditions after the first of the year and are going forward with new plant construction and improving their present layouts. Other operators have signified their intentions of adding new equipment as soon as the promised activity becomes real.

The most promising development in the New England states for 1930 appears to be in Connecticut, where some new plant construction is contemplated, while many of the present plants will be improved by the addition of new equipment. Operators in Maine, New Hampshire, Vermont and Massachusetts are planning little in the way of improvement or increased production capacity.

New York and Pennsylvania producers are quite optimistic over the promised demand for next year. At least four new plants are to be built in New York state by sand, gravel and crushed stone producers and the improvement programs already started give promise of the installation of much new machinery to replace old, obsolete equipment. Prospects appear particularly bright for the Keystone State. Many plants, especially in the eastern section of the state, are to be improved shortly to take care of increased production. Some activity is promised by operators in New Jersey and the Virginias. The Chesapeake Bay region appears quiet, with little being planned in the way of either new plant construction or equipment.

Florida and Georgia look to be the most promising of the southern states for plant construction and improvement next year. Some new plants are under consideration and quite a volume of remodeling is to be done. Texas and Oklahoma plant operators are looking forward to a good business year, judging from reports received from operators of non-metallic mineral plants in that area. Two Texas producers have definitely decided to construct new plants, while both states will have more efficient plants a year from now than they have today, judging from reports. Alabama, the Carolinas and Arkansas operators plan little in the way of major plant improvements in 1930, while Kentucky and Tennessee plants will be re-equipped in some sections.

In the Middle-west, Illinois operators appear to be the most active with plans for next year. Several new plants completed this year will soon swing into full production, while a large number of producers are to install new plant equipment. One of the important 1930 installations in Indiana will be the construction of a modern crushed-stone plant with a capacity of 3,500 tons per day near the center of the state. Iowa, on the crest of a road-building wave, has operators looking forward to another banner year and major improvements are planned by several important plants to take care of the promised demand. Michigan and Ohio aggregate producers are looking forward to good business next year. In both states—"Increased output"—seems to be the watchword for 1930, judging by the reports received from producers. In the area around Detroit, operators seem to be particularly optimistic. While no new plants of any consequence are to be constructed, much new equipment is to be installed to increase the efficiency of present layouts. Plants in Kansas, Missouri, Wisconsin and Minnesota will operate at about the same rate as in 1929, it is indicated.

Arizona and New Mexico operating companies will do the most in the way of new plant construction in the Western states. New feldspar and mica deposits are to be developed in the two states and one important plant is to be constructed in each state, according to present information. Montana, Nevada and Idaho operators have nothing of importance planned for the new year in the way of new construction or new equipment. Colorado, usually quite active in plant modernization, will do little along that line next year, operators report. One of the fluorspar producers in the state is planning to increase his output about 75 per cent—otherwise little activity in plant improvement is expected to develop.

California operators appear to be the most optimistic of any state west of the Mississippi river over prospects for 1930. One of the prominent sand and gravel producers in the Golden State is to build a new plant with a capacity of 250 cu. yd. per day. An important operator of silica sand deposits has tentative plans for a new plant with all new equipment. A large amount of machinery is to be installed by several other producers to replace present equipment.

Washington and Oregon producing companies expect to do little in the way of expansion, although one magnesite producer in the former state is reported to be planning to manufacture insulating materials in a new plant to be constructed in 1930.

Operators Discuss Business Prospects for 1930 in Letters to Pit and Quarry

Confidence in Country's Continued Prosperity Pervades Appended Forecasts

EXPRESSING confidence in the Hoover prosperity program and forecasting that conditions for 1930 will be about as good, if not better, than they have been in the past year seems to be the keynote of letters from operators throughout the country to the editor of PIT AND QUARRY. *The recent stock market crash will have little, if any, effect on construction activity, a digest of the letters reveals. Many are of the opinion that the easier money which has followed is bound to boom building by diverting investors' funds from stocks to construction securities. Several of the writers are optimistic over the enlarged highway construction programs planned next year.*

Excerpts from some of the communications received are printed below for the benefit of our readers.

Crushed Trap Rock Demand Appears Better for 1930

We expect the demand in 1930 for our crushed trap rock will be somewhat better than the demand for it in 1929, because we anticipate that construction of public works, particularly roads and bridges, will be carried on a little more extensively this coming year in the territory we serve. Prices in our line seem likely to change very little from their present level.

We do not anticipate any appreciable increase or decrease in wages in our line as we believe they are fairly well stabilized at present. An increase in wages would hardly have any considerable effect, either directly or indirectly, in the volume of public improvements in the localities we serve.

Competition has been, and is, very keen. If the demand for material in 1930 increases to a considerable extent over that of 1929, competition may not be quite so intense on account of the different producers being able to move a larger percentage of their possible production.

THE NEW HAVEN TRAP ROCK CO.
New Haven, Conn. Wm. E. Hilliard, *Gen. Mgr.*

New York Association Says Outlook Is Promising

The business outlook for 1930 in New York and Pennsylvania indicates a substantial increase in the demand for aggregates. Both states propose to increase their road building programs and public sentiment is forcing the early construction of grade crossing elimination bridges. The proposed increase in appropriations for federal aid roads and other public improvements will add to the volume. The Hoover prosperity program is expected to hasten and stimulate building generally. The only cloud on the horizon is the possible uneven geographic distribution of the work.

EMPIRE STATE SAND AND GRAVEL PRODUCERS ASSOCIATION,
Hamilton, N. Y. John G. Carpenter, *Sec.-Treas.*

Granite Company Looks for Decided Improvement

It is our belief that the granite business in Texas for 1930 will be decidedly improved over 1929. It has required a couple of years to get over one severe cotton crop failure through the central part of the state. Crops have not been bumper ones this year in all sections, but they have been fair both as to volume and price. Buying was decidedly checked during the period from 1925 to this date in the monumental line, and quite naturally some of this business will come back with fair prospects for another reasonably good year.

Cattle conditions are fair and altogether the outlook may be said to be above the average at this time of the year for all lines of endeavor in the state of Texas.

CASSADAY GREY GRANITE CO.
Llano, Tex. T. Y. Hill, *Treasurer.*

Seattle Lime Producer Has Hopes for Improvement

The conditions respecting business in the Northwest are not altogether satisfactory. There seems to be a lack of confidence and, so far as this particular district is concerned, there is a lack of manufacturing. Wages are too high in certain lines, and should be higher in others. Profits are not satisfactory on account of the extreme competition. The general disposition seems to be to cut prices to get orders. We hope to see an improvement next year, but this year's business on the whole has not been satisfactory so far as our interests go.

Seattle, Wash. ORCAS LIME CO.
J. D. N. Dally.

Looks Forward to More Public Improvement During 1930

Inasmuch as our product is used almost entirely in paving for streets or roads, it is our opinion that recent events in the stock market and in business generally, will be more likely to affect this kind of business favorably than otherwise. Our opinion is based on the supposition that the market for bonds will be better from now on for a while than it has been for some time in the past, and that this will result in more public work being undertaken which, of course, would include paving. We think this would have been the natural trend even though President Hoover had not inaugurated the program which is now under way. Efforts now being made along that line, if successful, will certainly tend to increase the amount of public work that would otherwise have been undertaken.

QUINN STONE & ORE CO., LTD.
Cleveland, O. L. E. Ives, *Sales Manager.*

Eastern Lime Operator Believes Industry Shows Improvement

The lime business as a whole, for the year 1929 apparently is in a much more healthy condition than a year ago, and I believe this condition is due largely to the activities of the National Lime Association in bringing before all the producers of lime the importance of co-operation. The problem of co-operation for the good of the industry, in the opinion of the writer, can best be handled through the Association which is now headed by very capable men who are not actively engaged in operating lime plants of their own. In addition to having gained considerable in membership during the past year, the National Lime Association sponsored the Federal Trade Practice Conference which was held with the Federal Trade Commission in Washington, D. C., at the Mayflower Hotel, during the week of June 27. The Code of Ethics, adopted by the industry as a whole at this Conference and since then ratified by the Federal Trade Commission—with a few modifications—is the greatest forward step that

has ever been taken for the betterment of the industry as a whole. Furthermore, it occurs to the writer that it behooves every manufacturer, no matter how large or small, to become a member of this Association as, by so doing, he can best shove the lime industry forward and combat competition of industries in other lines.

It is true that, in some sections of the country, there appears to be an over-capacity for production of lime and, as a result, plants located in such sections report having operated at only about 65 per cent or 75 per cent capacity throughout the year 1929. However, in the section in which we are located, which is central Pennsylvania, such has not been the case. The plant of Whiterock Quarries, for example, has operated 100 per cent time on lime from December, 1928, until November, 1929; and this condition is true of other plants in this section. Recently there has been a let-up in the lime business; but the records of our company show that this is entirely seasonable and, furthermore, that our business continues better at this time (the month of December) than it has been in any previous year except the year of 1927, which was rather unusual as there was not much let-up in the demand for lime over the holidays.

We have every reason to believe that the lime business will continue very good during the year 1930. We do not look for any decrease in the selling prices of this commodity and, as a matter of fact, our records show we have been receiving a slightly higher average price for lime shipped in 1929 than for that shipped during 1928. We believe the price for 1930 will be equally as high as 1929, with a possibility of a slight increase in certain lines.

While we have made many plant improvements and additions to our plant equipment during 1929 we have not increased our lime capacity. We have installed labor-saving devices at every point such equipment could be installed advantageously. On the other hand, we have trebled our capacity on pulverized limestone, as we find there is a rapidly growing market for this commodity.

The open-hearth limestone business has been very good with us during the past year but, on the other hand, blast-furnace limestone requirements have been practically nil, because most of the large steel companies are equipped to take care of their own blast-furnace stone requirements.

The crushed-stone business as a whole has been fairly good in this section, most of the stone going for highway construction purposes; but the writer is of the opinion that virtually all of this business was done without profit. We did not share very largely in crushed-stone business for highway purposes, due to the fact that we did not see fit to meet the ridiculous prices that were being quoted. We consistently held out for a fair price which would enable us to make a reasonable profit and consequently lost the business to competitors who were willing to sell at any price.

Summing up our business for the year, we are glad to report that it has been the most satisfactory year in our history. Our earnings are considerably larger than for any other year during the twenty-four years that our company has been engaged in the lime and stone business. However, the volume of business was not greater than in the year 1928 and the difference is attributed entirely to improvements that enabled us to produce all of our products at a lower cost, notwithstanding the fact we increased the wage rate during the past year.

We have every reason to believe that we will enjoy a fair amount of business in all departments during the year 1930. We believe that what is needed most in both the lime and stone business is closer co-operation between the various producers. It is the opinion of the writer that this co-operation could be best brought about by having memberships in the National Lime Association and the National Crushed Stone Association. Such memberships not only enable a producer to learn what is going on in the industry as a whole, but they give him the personal acquaintance or contact with competitors, which always goes a long way towards straightening out differences and furthering co-operation.

WHITEROCK QUARRIES,
Bellefonte, Pa. Ray C. Noll,
General Manager.

Producer Sees 1930 as Better Than an Average Year

The prospects for 1930 look very good—better than those during 1929.

As to prices, I think they are pretty well stabilized. There cannot possibly be any downward trend because they are at the bottom now. With reference to wages, we do not see how they could go down any and there will probably be some slight advance. It is a natural consequence that good wages always increase the buying power of practically all products.

Profits are small in our business and not very satisfactory. Competition is keen and there has been overproduction. Consequently there is not much chance for much more profit in the future than there has been in the past. Our production has always been ahead of demand.

We do not find much evil from big producing factors as they generally try to secure enough profit to enable them to stay in business, and anyone who does that is just an honorable competitor.

As far as the stock market is concerned, we cannot see that it affects our business in the least. Considerable advance is being made in production methods. Something is continually being learned to aid production and the producers naturally profit thereby. As a whole we feel satisfied with the prospects for next year, and hope to do better than an average business.

EMPIRE SAND & MATERIAL CO.
Marshalltown, Ia. W. S. Keller.

Expects Building to Speed Up Early Next Spring

It is our belief that the people in most communities are going to decide that, on account of an abundance of labor in all crafts that is available at this time, that 1930 will be an excellent time to build.

It is our candid opinion that this will take place early next spring, and as a consequence we are looking for our business to become quite active at that time.

ALTON BRICK CO.
Alton, Ill. Harry L. Meyer,
Vice President.

Sunshine Must Follow the Rain, Says Ben Stone

The outlook for general business during the first half of 1930 appears to us to be somewhat cloudy, with rain or snow, and in all probability a generous amount of thunder and lightning. But we know, of course, that such conditions must be followed by sunshine, so we are expecting on the whole the year 1930 will show about the same as 1928 and 1929.

We believe in the latter part of 1930 we will find general conditions very much improved.

THE MEROM GRAVEL CO.
Indianapolis, Ind. Ben Stone.

Predicts Prosperous Period

While our trade at the moment, for seasonal and other reasons, is somewhat slack, we have strong reason for believing that with the coming of spring weather next year we will enter upon a particularly prosperous period, since both road building and construction activities of various kinds promise to be heavy in our district during the year 1930.

CALCITE QUARRY CORP.
Lebanon, Pa. R. C. Lea, *President.*

Limestone Company Optimistic

Nineteen-twenty-nine has been a good year in this section and we see no reason, at the present time, why the year 1930 should not be as good, unless there should be some unfavorable developments, which do not at this time appear on account of the recent heavy decline in the stock market.

ACME LIMESTONE CO.
Alderson, W. Va.

West Virginia to Spend $30,185,000 Next Year

It would be our opinion that the business outlook for this vicinity, insofar as the products of our industry are concerned, will be more favorable in comparison with the past year. This opinion is predicated on the present estimated expenditures that will be available for the following improvements:

State Road Improvements	$13,000,000
County Road Improvements	2,000,000
State Board of Control	1,185,000
Municipal	300,000
New Railroad Construct'n.	2,000,000
Coal Industries	1,000,000
Manufacturing Industries.	10,700,000
Grade-Crossings Elimination	500,000
Total	$30,185,000

These sum total figures are very conservative and it would be no great surprise to us if they were greatly exceeded before the expiration of 1930.

UNION CONCRETE PIPE CO.,
Huntington, W. Va. T. A. Polansky,
Sales Manager.

Predicts Normal Demand

The demand by manufacturers for lime during 1930 appears to be normal in this locality. With the promises that have been made by the large interests to President Hoover on the expansion program during the coming year, we cannot help but feel that business will be normal during 1930. At least it will be on an equal basis with what it has been during the present year.

Lebanon, Pa. I. W. PEIFER.

Pennsylvania Producer Sees Demand in Road Work

In my opinion the volume of business for 1930 will be entirely satisfactory. The road building program under the direction of the Commonwealth of Pennsylvania, as well as minor road building programs directed by counties and townships, if carried out according to the present plans of the various authorities indicate a very substantial demand for sand and gravel.

The road building under consideration in eastern Ohio, western New York and northern Pennsylvania seems to promise a very heavy demand for sand and gravel for a number of years and the constantly increasing demand in other lines of construction work is much in evidence.

From all points of view as regards the territory mentioned, a satisfactory condition is promised in 1930 to those engaged in the production of sand and gravel and other road building material.

ALLEGHENY RIVER SAND CORP.
Pittsburgh, Pa.
John McCartney Kennedy,
President.

Lime Manufacturer Says Cooperation Is Needed

We believe the year 1930 holds better prospects in store for the building industry as a whole than the year 1929. We feel there is basis for hopefulness as far as the lime industry is concerned although it will require a tremendous amount of cooperation and promotion in order to accomplish real benefits.

G. & W. H. CORSON,
Plymouth Meeting, Pa. Philip L. Corson.

Says Government Regulation of Industries May Come

Our production for the year 1929 shows an increase of 30 per cent over that of 1928, although there has been a gradual recession of prices until at the present time prices are 10 per cent lower than in 1928. Fluctuation will be about the same during the coming year.

It is our belief that both prices and production costs have about reached bottom and that government regulation of industries will come as a matter of course.

GRAHAM BROTHERS, INC.
Long Beach, Cal. Robert Graham,
President.

Hopes Road Demand Will Take Up Slack in Flux Output

The present situation in the steel industry makes things look rather "blue" in our business as approximately 75 per cent of our output goes to that industry. However there is a silver lining as the Pennsylvania Highway Department is promulgating the largest program it has ever attempted and some of the slack in our flux business should be taken up in this way.

While the return of the steel industry will probably be rather slow we expect to see a noticeable improvement after the first of the year.

LAKE ERIE LIMESTONE CO.
Youngstown, O. Wm. M. Andrews,
Secretary.

Dolomite Head Predicts Only Moderate Activity

I look forward to moderate activity in limestone products moving to the steel mills. By moderate activity I mean perhaps 75 per cent of the 1929 business. For limestone products in road construction, I believe 1930 will exceed 1929. For limestone products moving into general building, we do not anticipate any increased activity and feel that if the volume of business equals 1929 in this department that the results should be satisfactory to those dependent upon this field of industry.

DOLOMITE, INC.
Cleveland, O. H. P. Eells,
President.

Cement Company Hopes for Slightly Higher Prices

We believe the coming year, as it affects the cement business, will be up to or slightly better than the average the last three years. There seems to be a general resumption of normal thinking toward permanent building. The prices for all commodities for the coming year may not be satisfactory; however, volume will be fair and those commodities now being sold at cost or less, no doubt, will be relieved in some manner by slightly higher prices.

WEST PENN CEMENT CO.
Butler, Pa. O. J. Binford,
General Manager.

Nebraska Road Program to Require Much Material

From the present outlook, next year is going to be a great year, at least for the gravel producing industry.

On November 27, the State Highway Department let about $600,000 worth of highway work which is to be started early next year, thus giving contractors time to make their arrangements and preparations. The road program, generally, by the state and by the counties, is going to be very extensive.

GENERAL AUTOMOTIVE CO.
Lincoln, Nebr. E. Podusak,
President.

Demand For Sand and Gravel in Utah Appears Good

We expect the demand for our products for the year 1930 to exceed that of 1929 because, for the last six years, there has been a growing demand in this territory for concrete materials. At present no particular new fields or uses for our products appear, and prices should be about on a par with this year's average, with possibly a slight increase.

The present scale of wages is probably not too high for profitable oper-

ation, providing all fields of industry uphold the scale. Increases in wages would not affect our market to any noticeable degree. Our profit from operation the past five years has been satisfactory; we have but little competition and our sales price has increased steadily. As to production, we do not produce materials ahead of demand. We store no surplus but operate to fill orders only as we receive them.

In our territory we have not yet noticed any ill effects from the break in the stock market. Our business has been constant and new work is being let. We have had no trouble with collections and have only the usual average of past due accounts.

UTAH SAND & GRAVEL PRODUCTS CORP.
Salt Lake City, Utah. L. R. Snow,
Office Manager.

Says Texas Democrats Like Hoover's Administration

We Democrats down in Texas rather like the present Republican President very much. He is certainly putting business administration into his affairs, and, with the amount of road and street work that is already contemplated in Texas and some of the other states in the South, and a little additional help from other sources is going to make business fine for material dealer contractors. There is only one bad handicap as we view it today, and that is that we have around $50,000,000 in municipal securities in Texas alone that, under our laws, cannot be sold for less than par. If Congress will create a loan fund to take over these securities at par, 1930 will be a banner year in the road and street building business.

STANDARD ROCK ASPHALT CO.,
San Antonio, Tex. D. E. Colp,
Gen. Sales Manager.

Iowa City Producer Sees 1930 as One of His Big Years

From the present outlook, 1930 should be one of our big years. There is still a large mileage of roads to be constructed, and roads already surfaced require additional surfacing about every two years, and in some instances, where the travel is heavy, some resurfacing is done each year.

Iowa is now going through an extensive road building program. The primary roads are being paved or surfaced; county and township roads are being graded to have them in shape for surfacing when money will be available. Our road program in this state had a hard time getting started, but now that we are in it the demand is for greater speed.

RIVER PRODUCTS CO.,
Iowa City, Ia. J. F. Sproatt.

Indiana Limestone President Sees Big Year Ahead

Our forecast of building conditions for the coming year shows that there is a good volume of business coming out. The United States government alone has a program of over $500,000,000 worth of work to be let in the next few years. There is also a large volume of railroad and public work.

The release of over $3,000,000,000 from call loans is going to make easier money for building, but loans on speculative work are going to be scrutinized quite carefully. Builders who have legitimate propositions will be able to borrow money at a low rate of interest. We think the prospects for the coming year are excellent.

Our fabricating plants at the present time have more work ahead of them than they have ever had. This is mostly public work and railroad work.

INDIANA LIMESTONE CO.,
Chicago, Ill. A. E. Dickinson,
President.

Predicts Banner Year for Crushed Stone Industry

In our line of business we are looking forward to a better year than the one just drawing to a close. Our plant has more orders for the coming year than we had this year, yet we have made no effort to go out after any new business at this time. It will become necessary for us to enlarge our plant this winter if we are to fill all the orders that we now have on hand.

There is a growing demand for crushed stone of superior quality and, as we have an unlimited supply of extra high grade stone, we are planning to expand so that we can get our share of the business.

THE BOORMAN STONE PRODUCTS CO.
Norwood, N. Y. W. F. Boorman.

Fluorspar Industry Faces Best Year Since War

The general business outlook for the year of 1930, so far as the fluorspar industry is concerned, is very much better than for any year since the World War. In making a recent survey of the principal consuming fluorspar centers I find conditions and business, generally, good considering the season. We are today in a much better position than we have ever been at this time of the year for several seasons past.

Prices will probably remain firm and about the same as they were during 1929, depending upon the quality of material produced.

BENZON FLUORSPAR CO.
Cave-in-Rock, Ill. Jno. W. H. Blee,
General Manager

Silica Producer Looks for Better Than Average Year

Our feeling regarding business in our line for 1930 is that it will probably start off for the first two or three months somewhat below normal, but we have every reason to expect that the following months will more than make up for this and we are looking forward to more than the average amount of business for the whole year.

OTTAWA SILICA CO.,
Ottawa, Ill. P. S. McDougall,
General Manager.

Foresees Better Demand For Crushed Stone

The demand next year for ballast and crushed stone in general will be, on the whole, a little better than 1929 for reason that orders already on hand and advance information from the railroads indicate some slight increase in their requirements. Also the highway departments of the states in which we do business have very formidable programs.

I do not think there will be much change in prices as they are quite well stabilized and satisfactory, neither do I think there will be any particular change in the rate of wages. I think they are well proportioned to the selling prices of stone. Of course, all wage increases do increase the public's buying power but unless buying power is apportioned to substantially all commodities, for which there is no plan or correlation, advance in wages does not necessarily improve business except in certain directions. Of course all business is dependent upon the desire for things, the knowledge of how to use them, the time in which to use them, and the money with which to buy them. The saturation point of buying comes when any one of these four prerequisites are wanting.

My observation is that business conditions are quite satisfactory as regards profits and there is a fairly well adjusted relationship between supply and demand, in consequence of which prices are comparatively steady. Competitors are exercising reasonable judgment. There doesn't appear to be any movement in the way of consolidations but such as there are seem to be successful and probably in the right direction. We do not think that our business will be affected by stock market conditions. As an industry, producers are availing themselves of the latest types of machinery as circumstances justify its use.

THE GENERAL CRUSHED STONE CO.,
Easton, Pa. John Rice,
President.

MANUFACTURERS' PUBLICATIONS

Each publication listed below contains information of interest to non-metallic mineral producers. Readers may obtain, without charge—except where a price may be stated—and without obligation, copies of any of these publications by writing directly to the manufacturers who publish them. Please mention PIT AND QUARRY *when making such requests.*

Admixtures

Diatite Increases Strength and Durability of Concrete. 8 p., 6 ill. (B. C. Refractories, Ltd., Vancouver, B. C., Can.) Describes the use of "diatite" as an addition to concrete mixtures. Charts and illustrations point out increased strength, workability and yield obtained.

Brick

Rock-O-Lite. 6 p. (Sand-Lime Products Co., Detroit, Mich.) Describes the composition, uses and advantage of Rock-O-Lite, a sand-lime brick of unusual hardness, whiteness and uniformity.

Drills

Cleveland Streamline Drifters. 4 p., 8 ill. (Bulletin No. 103. Cleveland Rock Drill Co., Cleveland, O.) Describes, illustrates and lists specifications for the new one-man drift-drills —Models D7, D8 and D9.

Drives, Roller Chain

Link-Belt Roller Chain Drives. 96 p., profusely illustrated. (Data Book No. 1257, Link-Belt Co., Chicago, Ill.) Lists, describes and illustrates roller chains, sprocket wheels and applications of these drives in various industries. Has 33 pages of valuable data and tables for determining strengths and sizes of chain to be used.

Engines, Diesel

Buckeye Diesel Engines. 24 p., 22 ill. (Bulletin 505. Buckeye Machine Co., Lima, O.) Describes and illustrates, part by part, the diesel engines manufactured by this company. Fuel consumption at operating speeds is charted.

Buda-M. A. N. Diesel Engines. 8 p. 8 ill. (Bulletin No. 654-A. The Buda Co., Harvey, Ill.) Describes the operation and illustrates the construction of diesel engines. Supplementary Bulletin 633-A, Bulletins 695 to 700 and Bulletins 711, 712 and 713, also published, give additional information.

Engines, Internal Combustion

Industrial Engines. 6 p., 19 ill. (Fuller & Johnson Mfg. Co., Madison. Wis.) Illustrates and describes the series "B" 2- and 4-cylinder engines, listing specifications and new features.

Fuels

Lignite as a Commercial Fuel. 8 p. (Combustion Engineering Corp., New York, N. Y.) Describes the chemical composition of lignite and the burning technique as used in powdered form for industrial and commercial fuel.

Grizzlies

It's a Bear! 4 p., 5 ill. (Bulletin No. 104, Fairmont Mining Machinery Co., Fairmont, W. Va.) Describes and illustrates an improved roll grizzly screen.

Heating Equipment

Venturafin Method of Heating. 24 p., 25 ill. (Bulletin No. 7818. American Blower Corp., Detroit, Mich.) Describes and illustrates method of industrial heating by forcing air through a honey-comb radiator unit. Capacity tables are also included.

Hoists

Ford Chain Hoists and Trolleys. 32 p., 49 ill. (Ford Chain Block Co., Philadelphia, Pa.) A new catalogue listing, describing and illustrating each type of Ford Hoist. Many useful tables of hoisting data included.

Insulators

Westinghouse Apparatus Insulators. 20 p., 26 ill. (Circular 1858, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.) Describes, illustrates and gives test data on a complete line of outdoor apparatus insulators.

Pulverizers

Performance Records of the Raymond Kiln-Mill. 4 p., 3 ill. (Raymond Bros. Impact Pulverizer Co., Chicago, Ill.) Describes and illustrates typical installations of an air-drying pulverizer in gypsum, limestone and other industries.

Universal Pulverizers. 4 p., 11 ill. (Universal Crusher Co., Cedar Rapids, Ia.) Describes and illustrates various sizes of portable and stationary pulverizers, and hammer-mills for reducing crushed stone to fine sizes.

Pumps, Slurry

Morris Slurry and Sludge Pumps. 12 p., 17 ill. (Bulletin 135. Morris Machine Works, Baldwinsville, N. Y.) Describes and illustrates various types of pumps, together with performance data.

Pumps, Deep Well

Alamo Dorward Rotary Power Heads. 58 p., 29 ill. (Alamo Engine Co., Hillsdale, Mich.) Describes and illustrates complete power heads for operating various deep-well pumps, and gives valuable hydraulic tables.

Scrapers

"Gravel Plant in New Jersey Spans Narrow River." 4 p., 6 ill. (*Sauerman News*, Nov., 1929. Sauerman Bros., Inc., Chicago, Ill.) Describes and illustrates an unusual application of a dragline scraper.

Screening

The Importance of Screening to Crushing and Grinding. 4 p., 7 ill. (The W. S. Tyler Co., Cleveland, O.) Describes and illustrates the use of Hum-mer screens between crushing and grinding equipment.

Treads

Feralun Anti-Slip Treads. (Data sheets 344-1 to 344-9 and Bulletins BS304, C174, CH305, Ind. 327, B273, E262-1, A274, S227-2.) 32 p., 42 ill. (American Abrasive Metals Co., New York, N. Y.) A comprehensive presentation of all types of abrasive metal walkway surfaces, together with illustrations of their use in plants and offices, and construction details.

Trucks, Motor

A Modern Addition to a Modern Line. 4 p., 7 ill. (Mack Trucks, Inc., New York, N. Y.) Specifications, illustrations and description of the new Model BC 6-cylinder Mack truck.

Trucks, Lift

The Footlift. 4 p., 2 ill. (Circular No. 100, Lewis-Shepard Co., Boston, Mass.) Describes and illustrates a new lift truck which picks up and sets down the load by pedal pressure, instead of by hand lever.

Welding

"Not Beyond Repair." 2 p., 3 ill. (*Oxy-Acetylene Tips*, Dec., 1929. Linde Air Products Co., New York, N. Y.) Describes method of welding crank cases and cylinder blocks.

Coming Events

Jan. 11-18, 1930. Atlantic City, N. J. Annual convention and show, American Road Builders' Association. Chas. M. Upham, secretary-director, 914 National Press Bldg., Washington, D. C.

Jan. 20-23, 1930. Cincinnati, O. Annual convention and Manufacturers' Division Exposition, National Crushed-Stone Association, at Hotel Gibson. J. R. Boyd, secretary, Merchandise Bldg., 14th and S Sts., N. W., Washington, D. C.

Jan. 28-30, 1930. Memphis, Tenn. Annual convention and Manufacturers' Division Exposition, National Sand & Gravel Association, at the Peabody Hotel. V. P. Ahearn, executive secretary, Munsey Bldg., Washington, D. C.

Jan. 29-30, 1930. Milwaukee, Wis. Annual convention, Wisconsin Concrete Products Association, at Hotel Plankinton.

Jan. 22, 1930. Birmingham, Ala. Portland Cement Association regional safety meeting, at Tutweiler Hotel. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Feb. 4-6, 1930. New York, N. Y. Annual meeting Sand-Lime Brick Association, at Pennsylvania Hotel. Ellen Knight, secretary, Saginaw, Mich.

Feb. 4, 1930. Dallas, Tex. Portland Cement Association regional safety meeting, at Baker Hotel. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Feb. 11-13, 1930. New Orleans, La. Annual meeting, American Concrete Institute, at the Roosevelt Hotel.

Feb. 11, 1930. Cincinnati, O. Portland Cement Association regional safety meeting, at Hotel Gibson. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Feb. 16-20, 1930. Toronto, Can. Thirty-second annual meeting, American Ceramic Society at Hotel Royal York. Gordon C. Keith, secretary-treasurer, 49 Turner Road, Toronto 10, Canada.

Feb. 25-28, 1930. Wichita, Kan. Fifth annual Southwest Road Show and School at the Coliseum. Secretary, P. O. Box 1043, Wichita, Kan.

Feb. 25, 1930. St. Louis, Mo. Portland Cement Association regional safety meeting at

Mar. 3-5, 1930. Chicago. National Management Congress, at Stevens Hotel. G. E. Pfisterer, manager, 308 W. Washington St., Chicago.

Mar. 3-7, 1930. Chicago. Industrial Equipment Exposition at Stevens Hotel. G. E. Pfisterer, manager, 308 W. Washington St., Chicago.

Mar. 3-7, 1930. Chicago. National Industrial Exposition at the Stevens Hotel. George Pfisterer, secretary, 308 W. Randolph St., Chicago.

March 4, 1930. La Salle, Ill. Portland Cement Association regional safety meeting, at Hotel Kaskaskia. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

March 18, 1930. Des Moines, Ia. Portland Cement Association regional safety meeting, at Hotel Fort Des Moines. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

March 25, 1930. Kansas City, Mo. Portland Cement Association regional safety meeting, at Hotel Muehlebach. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Apr. 5-9, 1930. New York, N. Y.; Hoboken, N. J.; Washington, D. C. Fiftieth anniversary meeting, American Society of Mechanical Engineers, at American Machinist offices in New York; Stevens Institute, Hoboken; U. S. Chamber of Commerce Bldg., Washington.

April 7-11, 1930. Atlanta, Ga. Annual meeting, American Chemical Society.

April 15, 1930. Albany, N. Y. Portland Cement Association regional safety meeting, at Hotel Ten Eyck. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

May 12, 1930. Cleveland, O. Meeting, Steel Founders' Society of America. G. P. Rogers, managing director, 932 Graybar Bldg., New York, N. Y.

May 29, 1930. Easton, Pa. Portland Cement Association regional safety meeting, at Hotel Easton. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

June 16-25, 1930. Berlin, Germany. World Power Conference. World Power Conference Program Committee, Room 818, 29 W. 39th St., New York, N. Y.

June 24, 1930. Cleveland, O. Portland Cement Association regional safety meeting, at Hotel Cleveland. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

June 26, 1930. Washington, D. C. Portland Cement Association regional safety meeting, at Hotel Raleigh. A. J. R. Curtis, secretary, 33 W. Grand Ave., Chicago, Ill.

Census Bureau Applies Practical Sales Methods to Census of Manufacturers

The Advisory Committee on Manufactures, which was appointed by Secretary Lamont last summer, has approached the forthcoming decennial inventory of manufacturing operations from a practical standpoint. Under the Chairmanship of Col. L. S. Horner, president of the Niles-Bement-Pond Company, New York City, the Committee has displayed commendable activity in laying the plans for this huge undertaking of the Bureau of the Census, and after thorough study and consultation with experts is ready to put into working force, plans which it believes will result in the collection of data of increased value to manufacturers, both from an accuracy and timeliness standpoint.

American production and distribution have entered into a new era of activity. New and intensified problems have appeared on the horizon—production has become an exact science, and keener and keener competition has harassed distribution. Manufacturers and distributors cannot depend on the old thumb-and-rule methods—they must keep abreast of the times through current data to succeed.

The Advisory Committee on Manufactures and the Census Bureau officials are keenly aware of the value of current production and distribution data to manufacturers and distributors. They are desirous that the benefits of this manufacturing inventory to be taken in January shall be shared by all business men, so that waste in production and distribution may be eliminated and the full fruits of labor shared by all business.

With this view in mind, the Advisory Committee on Manufactures created a subcommittee on information under the chairmanship of Robert M. Davis, statistical editor, McGraw-Hill Publishing Company, New York City. This subcommittee has studied the best methods of bringing the practical use of the census data to the attention of manufacturers that accurate and quick returns may be received by the Census Bureau at the opening of the year.

Indiana Awards Contracts for 1930 Highway Cement

Contracts for 2,000,000 barrels of cement for use in the 1930 construction program have been awarded by the Indiana highway commission. The largest award went to the Marquette Cement Manufacturing Company, which will supply 500,000 barrels. Eight other companies received contracts, the smallest award being for 25,000 barrels.

Use of Paper Bags Increasing

Cement manufacturers in the United States are shipping more of their product in paper bags each year. Not only has the paper bag eliminated the old cloth-sack problem which, since the inception of the industry in this country, has always been a costly and troublesome matter, but shipments in paper are reaching the user in perfect condition in most cases. Constant improvements in the multi-wall paper bag have made this possible.

A small plant to produce crushed rock and gravel is to be erected by the Rillito Sand and Gravel Company near Tucson, Ariz.

PERSONAL MENTION

I. E. Averitt, Nashville banker, has taken control of the lime kilns near Erin, Tenn., and will soon begin operating. The plant is undergoing repairs. It was formerly owned and operated by the Southland Lime Company.

Mark L. Hill, superintendent of the new plant of Randolph Silica Products Co. at Madill, Okla., reports that the plant is just beginning operations.

Gilbert M. Sawyer is treasurer of the Temple Slag Co., a new corporation at Temple, Pa.

Col. O. P. Chamberlain has been elected president of Dolese & Shepard Co., producers of crushed limestone, Chicago, Ill., succeeding **J. F. Talbot.** Mr. Chamberlain was formerly vice-president, being succeeded by **W. Roy Carney.** Other officers elected are **Edward R. Hills**, secretary, and **Wm. J. Stoffel**, treasurer.

Geoff A. Saeger, formerly superintendent of the cement plant at Neville Island, Pa., of Basic Products Co., is now chemical engineer of the Missouri Portland Cement Co. of St. Louis.

H. B. Moseley, New York manager of the Beaumont Manufacturing Co., a division of the R. H. Beaumont Co., is now connected with the Philadelphia office of the latter company.

H. S. Ford, Eastern sales manager, has been transferred from Philadelphia to New York, where he will cooperate with **H. W. Ruth** in handling all sales matters in the New York district.

W. S. Lincoln, well known marble production man, is now in charge of the Whitestone, Ga., plant of the American Marble Co.

J. J. Hartley has been appointed chief engineer of the Pershing Road plant of the Link-Belt Co. at Chicago, Ill. He was formerly in charge of foundry equipment sales in the western division of the organization. For the past 19 years he has held various positions with the company. **W. L. Hartley**, brother of "J. J." and formerly assistant in the foundry equipment sales department, has been appointed manager of this department to replace his brother.

A. B. Johnson has been made quarry superintendent of the Keyport Limestone Co. of Logansport, Ind. **M. J. Becker** has taken a position as bookkeeper.

George B. Massey, associated editor of PIT AND QUARRY, will address the members of the Western Society of Engineers at Engineering Hall, Chicago, Ill., on the evening of January 6. His subject will be, "Modern Methods of Grading and Excavating."

Lars Vorren, chief chemist of the Oakfield Gypsum Products Corp., Oakfield, N. Y., left recently for a visit with relatives in Sands Havn, Norway. He will be gone for three or four months.

L. J. Folse has been appointed secretary and treasurer of the National Portland Cement Co. of Mississippi, with headquarters at Vicksburg, Miss. A cement plant is soon to be constructed by the company at Vicksburg, it is reported. Mr. Folse, previous to his present connection, was general manager of the Mississippi State Board of Development.

E. B. Nichols, well known for his activities in the A. S. M. E., has been appointed Chief Engineer by the Brown Instrument Company of Philadelphia. Mr. Nichols, who is an M. E. graduate of North Carolina State College, was at one time chief engineer of the Pfaudler Company, Rochester, N. Y., subsequently holding the position of chief engineer of the Victor Talking Machine Company, Camden, N. J. Later he became associated with the Bell Telephone Laboratories, which connection he severed to join the Brown Instrument Company organization. Mr. Nichols will act in an administrative capacity, supervising the work of the engineering staff. His past achievements, his broad executive experience and ability in handling men and materials equip him particularly well for the varied and difficult problems presented in his new work.

Charles J. Horn, formerly assistant chief engineer of Stephens-Adamson Mfg. Co., manufacturers of variable speed reducers and conveying, elevating and screening machinery has taken charge of the recently established branch engineering and sales office of the firm in Seattle, Wash. The office is located at 521 Skinner Bldg.

M. P. Lane, for many years treasurer of the Southern Portland Cement Company, died at his home in Rockmart, Ga., Dec. 16. Death was due to heart failure. Mr. Lane was one of Rockmart's most esteemed citizen, and it was largely through his efforts that many of that city's civic enterprises were carried forward to completion. His widow, five sons and four daughters survive.

Eric Wolff, 63, sales engineer for the Allis Chalmers Manufacturing Co., Milwaukee, for 17 years, died suddenly on November 24. Death was caused by heart disease. During his association with Allis Chalmers, Mr. Wolff designed power plants for many Wisconsin cities, including Hartford, Kenosha and Richland Center.

Maurice A. Oudin, 63, vice-president of the International General Electric Co., died at his home in Schenectady, N. Y., on the night of December 4 of pneumonia. Mr. Oudin was graduated from the College of the City of New York in 1885 with the degree of A. B., and was graduated from Princeton University in 1891 with the degrees of E. E. and M. S. In the same year he joined the Thomson-Houston Electric Company, of Lynn, Mass., and continued in various capacities with its successor, the General Electric Company, at Schenectady. He was active in the power and mining interests, and served for a time as acting district manager of the Denver territory. In 1919, the International General Electric Company was formed to take over all the activities of the parent company with relation to foreign usiness, and Mr. Oudin was appointed its first vice president. With a background of long experience in foreign business, and Mr. Oudin was appointed authority on the subject of international trade and economics. A pioneer in the forward movement of the foreign trade of the United States he early recognized and pointed out that a constantly increasing outlet for the country's products was essential to the stabilizing of domestic industries. He was instrumental in advancing the technical and foreign interests of the country and served on the Advisory Committee of the Far East, a group of business men with which the Department of Commerce conferred on major problems relating to the Far East while Herbert Hoover was secretary of commerce.

INSURANCE PROBLEMS DISCUSSED

Reviewing the Year's Improvements in Insurance Practice

Of all creations in the business world, we used to regard insurance as the most changeless. Looking back over scores of years of quiet, prosaic service, with few spectacular events and few failures, it seems as though insurance has always been just as it it. Therefore we have been astonished to find that we can count up several major changes in 1929. New business conditions have called for modifications in policy forms, and the past year must be reviewed as one of striking technical improvements.

The improvement which has affected the most people has been the development of the merit rating plan for automobile liability insurance. If you have owned a private passenger car (not a truck) for the past two years and during that time (the last three months being omitted from calculation) you have not been held liable for the payment of damages in an automobile accident, you are entitled to a discount of ten per cent from the standard rates. This is the beginning of an attempt by the substantial companies to put a premium on careful driving, and the idea will probably be further extended as fast as reliable loss statistics can be assembled.

Winter Lay-up of Cars

One other feature of automobile insurance, while not actually new this year, has been so much developed recently that it is of great current interest. This is the so-called winter suspension of coverage. There are many families with two cars who lay up the roadster or extra car during cold weather, and there are plants which have their dull season in winter and can cut the overhead expense by storing the cars used for business purposes. All such car owners must keep their fire and theft insurance in force, of course, because cars may be stolen or burned while in garages, but they have no need for liability coverage when the car is definitely out of use. It is possible now, by giving notice to your agent, to have the liability insurance suspended during the winter lay-up and to get back to full pro rata portion of your premium with no charge or deduction, and I have noticed that in the past six weeks a considerable number of insureds have just learned the advantages of this plan.

Next greatest in the number of insurance buyers affected has been the extension of the steam boiler policy to cover gas explosions. With the use of oil and gas as fuel we are experiencing a great many explosions whether in the fire chamber or in the flue. Although excluded from the old boiler policy, these accidents can now be insured against. This coverage was more fully explained in the last issue of this magazine.

Fire Policy Changes

Even the most conservative field of underwriting, fire insurance, has experienced changes in 1929 due to new conditions in the business world. For several years we have realized that the large risks, the corporations with five or more branches, needed special consideration because of the interrelationships between their divisions. Now the principal fire insurance companies have organized a special trade bureau, called the Interstate Underwriters Board, which is studying these large corporations, devising policy forms to fit their special needs, and in many cases reducing their rates.

A fire insurance change which affects many producers in our field of industry has been an important refinement of the "use and occupancy" policy. This policy, also called "business interruption" insurance, pays the insured for the loss of profits and overhead during the period necessary to rebuild a plant which has been destroyed by fire. The newest so-called "coinsurance" form of policy exactly fits the needs of our producers. It covers net profits for a year after the fire and salaries of foremen, office help and executives for three months (the usual rebuilding period). This gives us the best protection ever obtainable at a cost less than the former policy.

A Bargain Ended

It is not often that one can get a genuine bargain from the old line life insurance companies. Their rates are figured accurately from scientific mortality tables and all the various policy forms are mathematical equivalents of each other. Yet today the companies appear to be selling one thing below cost. That is the disability coverage. Most companies permit the extension of the life insurance policy so as to pay the insured $10 a month (per $1,000 of face value) in case of total, permanent disability. Since the loss of a man's earning power is worse than death from the economic standpoint of his family, this disability protection has become a big factor in life insurance. Loss data now indicate that the charges for this coverage have been almost uniformly too low and several state insurance commissioners have ruled that the life insurance companies must either raise their rates materially or limit their policy form on or shortly after the first of next year. We therefore recommend that you check up on this with your broker to see if there is need for some action to safeguard the future of yourself and your family.

The past year has been a phenomenal growth in the popularity of business life insurance. Since this subject has been fully discussed in recent issues, we merely note here the fact that probably the majority of well managed partnerships and close corporations have now adopted some plan of insurance to guarantee the continuation of the business after the death of any single partner.

Stock Market Effects

The most widespread concern of the public is in the matter of financial stability and safety. Since insurance company funds are all invested in securities, many have wondered what effect the recent stock market collapse had on the assets of the companies. Most of the substantial fire and casualty companies had been setting aside a special reserve independent of their regular surplus to take care of an anticipated shrinkage in security values, and I have not heard of any company's resources being seriously damaged. The life insurance companies have in fact gained from the stock market collapse. American life insurance companies do not buy common stocks; they invest their assets in bonds and mortgages. Since we appear to be entering an era of higher prices for bonds, the life companies are actually in a stronger position financially today than they were two months ago.

FINANCIAL NEWS
CORPORATE & BUSINESS

The information contained in these financial pages is given with the understanding that any statement on the part of this magazine or any of its staff, as to the responsibility or standing of any person, firm or corporation, or as to the value of any property or securities is a mere expression of opinion, given as a matter of service to the readers of PIT AND QUARRY, *for which no responsibility in any way is to attach to this magazine or to any of its staff.*

The Past Year from a Financial Angle

In reviewing the year 1929 from a financial viewpoint, of course the outstanding event was the recent severe break that occurred in the securities market. This break was the most drastic general decline in the history of the country and the present trend is definitely toward a period of stabilization of market prices on an investment basis. The major bull market just passed, had its inception in the fall of 1921, and continued with minor recessions in 1923, 1924 and 1926 to its peak on the third of September, 1929, at which time the average price index reached its all-time high. During the entire month of September the market was weak, but the real break in prices did not begin until the last few days in October and the final drop occurred on November 13th, when the lows of over a year and a half were reached by most listed stocks.

Several factors were directly responsible for this stock market debacle: bear pressure, which made itself felt in the first part of the movement; forced liquidation of margin accounts, once the decline was under way; and a psychological state on the the part of the security-owning public which bordered on hysteria and panic. The entrance of the public into the market and a general feeling of bullishness concerning the continuing prosperity of the country had pushed stocks to a point far out of line with their earnings' records and near-term prospects, resulting in pessimistic announcements on the part of well known economists relative to the technical solidarity of market prices at the end of the summer.

However, after the debris has been cleared away, and with the market again running on a regularly normal schedule, there is still every reason to be optimistic concerning the general condition of the country. In the last issue of PIT AND QUARRY we stated the attitudes that several representative leaders in the cement, limestone, gypsum and related lines had assumed. Their combined standpoints indicate that sound values have not been disturbed by the mere collapse of market prices of securities and that there should be continued prosperity in the country's basic industries. Money which has been used for the past half-dozen years for the mere purpose of speculation should now find its way back into, and stimulate, legitimate business.

We would like to stress in these columns the desirability of studying one's portfolio of securities with the purpose of disposing of highly speculative and uncertain stocks, and the placing of funds in stocks which are attractive as income producers and of sound value.

The cement business during the year 1929 has not been particularly encouraging and the fact that drastic price cuts were witnessed in practically all sections of the country where consumption normally is heavy did much to produce an adverse effect on the earnings of most producers.

These price slashes were not inspired by any new element of danger in the industry. Rather, they were the inevitable result of severe and long-standing competition in an overcapacitated field. For several years many of the smaller producers are said to have engaged in questionable sales practices in order to hold their business; and rather than sanction and follow such methods, the leading manufacturers made a tremendous price cut. It would seem as though any material improvement for the country as a whole must come from the producers themselves through limitation of output and maintenance of adequate price levels.

Recently, however, an increase in prices was made for portland cement

CURRENT DIVIDENDS

COMPANY	CLASS OF STOCK	DIVIDEND RATE	HOLDERS OF RECORD	PAYABLE
Alpha Portland Cement	Preferred	1¾% qr.	Nov. 30	Dec. 14
Atlas Portland Cement	Preferred	$.66⅔ qr.	Dec. 21	Jan. 1
Atlas Portland Cement	Common	$.50 qr.	Nov. 16	Dec. 3
American Aggregates Corp	Preferred	1¾% qr.	Dec. 20	Jan. 1
Boston Sand and Gravel	Preferred	$.87½ qr.	Dec. 22	Jan. 1
Boston Sand and Gravel	Common	$.40 qr.	Dec. 22	Jan. 1
Calaveras Cement Co	7% Pfd.	1¾% qr.	Dec. 30	Jan. 15
Canada Cement	6½% Pfd.	1⅝% qr.	Nov. 30	Dec. 31
Canada Gypsum and Alabastine	New stock	$.37½ qr.	Dec. 14	Jan. 1
Cleveland Builders Supply	Common	$.50 qr.	Dec. 15	Jan. 1
Consolidated Oka Sand and Gravel	Preferred	1¾% qr.	Dec. 27	Jan. 2
Coronet Phosphate Co	.....	$2.00 qr.	Dec. 14	Jan. 1
Dolese and Sheperd	.....	$2.00 qr.	Dec. 20	Jan. 1
Dufferin Pav. and Crushed Stone	7% 1st Pfd.	1¾% qr.	Dec. 16	Jan. 1
General Asphalt	Common	$1.00 qr.	Nov. 26	Dec. 16
Grant Portland Cement	Preferred	$1.75 s. a.	Dec. 2	Dec. 16
Ideal Cement Co	Common	$1.75 qr.	Dec. 13	Jan. 1
Illinois Brick	.....	$.60 qr.	Jan. 1	Jan. 15
International Salt Co	.....	1½% qr.	Dec. 16	Jan. 1
International Cement	Common	$1.00 qr.	Dec. 11	Dec. 28
Johns Manville	Preferred	1¾% qr.	Dec. 12	Jan. 2
Johns Manville	Common	$.75 qr.	Dec. 26	Jan. 16
Kelley Island Lime & Tr	.....	$.62½ qr.	Dec. 20	Jan. 1
Kentucky Rock Asphalt	Preferred	1¾% qr.	Nov. 15	Dec. 3
Kentucky Rock Asphalt	Common	$.40 qr.	Dec. 15	Jan. 1
Laclede Clay Products	Preferred	1¾% qr.	Dec. 29	Jan. 1
Lawrence Portland Cement	.....	1% qr.	Dec. 14	Dec. 30
Lehigh Portland Cement	Preferred	1¾% qr.	Dec. 14	Jan. 1
Limestone Products	7% Pfd.	1¾% qr.	Dec. 15	Jan. 1
Medusa Portland Cement	Preferred	1½% qr.	Dec. 25	Jan. 1
Medusa Portland Cement	Common	$1.50 qr.	Dec. 25	Jan. 1
Metropolitan Paving Brick	Preferred	1¾% qr.	Dec. 15	Jan. 1
Mineral Products Co	Pfd. "A"	$.20 qr.	Dec. 30	Jan. 1
National Brick of Laprarie	Preferred	$.75	Nov. 31	Dec. 16
Pacific Portland Cement	Common	$2. spcl.	Dec. 14	Dec. 18
Peerless Cement	Preferred	$1.75	Dec. 20	Dec. 31
Pennsylvania Salt	Common	$1.25 qr.	Dec. 30	Jan. 15
Raybestos Manhattan	Common	$.65 qr.	Dec. 2	Dec. 16
Santa Cruz Portland Cement	.....	$1.00 qr.	Dec. 24	Jan. 1
Sterling Salt	Common	$.50 qr.	Dec. 24	Jan. 1
Superior Portland Cement	Class A	$.27½ M	Dec. 23	Jan. 1
Texas Gulf Sulphur	.....	$1.00 qr.	Dec. 2	Dec. 16
United States Gypsum	Preferred	1¾% qr.	Dec. 14	Dec. 30
United States Gypsum	Common	$.40 qr.	Dec. 14	Jan. 1
Warner Co	1st Pfd.	$1.75 qr.	Dec. 14	Jan. 1
Warner Co	Common	$.50 qr.	Dec. 30	Jan. 15
Worcester Salt Co	Common	1¼% qr.	Dec. 24	Dec. 29

in the northeastern and southeastern districts by leading manufacturers, which will undoubtedly be followed by similar price changes throughout the industry, and this indicates a return to levels permitting more profitable operations.

That this trade move contained an element of surprise was marked by the fact that cement shares immediately reflected the news. International Cement advanced 5¾ points to 61; Penn-Dixie preferred, 7⅞ to 43; Lehigh Portland, 6 to 42; Alpha Portland, 9 to 34; Atlas Portland, 5 to 39; and North American Cement, 2 to 5.

Although it is generally admitted that increased prices will benefit the entire trade, interests close to the industry feel that conditions can not be restored to a satisfactory basis without stabilization of prices at a still higher level and limiting production to current demand.

History of the past ten years in the portland cement industry has been featured by a rapid increase in production and manufacturing capacity, accompanied by falling prices and a large accumulation of stocks on hand. Peak operating levels were reached in 1928, when manufacturing capacity was 243,252,000 bbl. and production totaled 176,195,000 bbl. This compares with capacity of 146,400,000 bbl. and production of 100,023,000 bbl. in 1920. Prices declined from an average of $2.01 per bbl. in 1920 to an average of $1.57 in 1928, and stocks on hand increased from 8,833,000 bbl. in 1920 to 22,917,000 in 1928.

In the current year, capacity has remained practically unchanged from last year; production has decreased slightly and stocks on hand have continued to advance. For the ten months ended October 31 last, production totaled 144,896,000 bbl., compared with 148,711,000 bbl. in the like period of 1928, a decrease of 2.6 per cent. Shipments aggregated 152,240,000 bbl., against 153,458,000 bbl. last year, a decrease of 0.8 per cent. Stocks on hand, however, advanced to 15,361,000 bbl. from 14,495,000 bbl. on October 31, 1929, or an increase of 5.4 per cent. Prices declined further to an average of $1.40 per bbl. before the recent increases.

Coincident with substantial expansion of manufacturing facilities during the past few years has been a steady decline in the ratio of production to capacity. Highest ratio of production to capacity was reached in 1924 when output of 149,358,000 bbl. represented 85.3 per cent of total capacity of 175,100,000 bbl. Since that year operating ratio has receded steadily, declining in 1925 to 83.5 per cent; in 1926 to 76.4 per cent; in 1927 to 76.2 per cent, and in 1928 to 72.4 per cent. For the current year total production is running about 70 per cent.

Trend of the industry during the 1924-28 period also is indicated by the fact that while capacity was being increased by 38.9 per cent, production gained only 18.9 per cent, and stocks on hand were increased by 61.9 per cent.

Production, capacity, shipments and stocks on hand of the portland cement industry during the past ten years are shown by the following table in thousands of barrels:

	Production	Capacity	Shipments	Stocks on hand at end of year
*1929	144,896	244,000†	152,240	15,361
1928	176,195	243,252	175,734	22,917
1927	173,206	227,080	171,864	22,081
1926	164,530	215,300	162,187	20,740
1925	161,658	193,558	157,295	18,336
1924	149,358	175,100	146,047	14,151
1923	137,460	161,858	135,912	10,812
1922	114,789	146,203	117,701	9,352
1921	98,842	144,354	95,507	12,192
1920	100,023	146,400	96,311	8,833

*Ten months ended October 31.
†Estimated capacity for full year.

Cement Importation

It is not easy to see how the vexatious problem of foreign competition is to be solved by increasing prices. Importations of foreign, particularly Belgian, cement have for some time been at the bottom of the troubles of American producers. Belgian cement has been sold at Atlantic and Gulf ports in substantial amounts at prices averaging 86 cents per barrel below the minimum levels prevailing in this country. Although the quantity of imported Belgian cement has never aggregated more than 2 per cent of the total United States production, it has tended to influence prices as well as to compel unprofitable selling by American concerns in the districts surrounding the ports of entry.

Such importations caused the passing of the Penn-Dixie dividends, the closing of International Cement's Norfolk, Va., mill, and it generally played havoc with the earnings of domestic producers. The wage scale paid the European cement worker is approximately one-fifth that paid the American cement worker and, largely on this argument, the cement industry has been contending for an importer's duty on cement.

Expansion in Building

Now that powerful emphasis is being laid upon the necessity of expanding building and highway construction, it is logical to expect that more cement will be needed. As is shown by the above chart, stocks of portland cement in the country showed at the end of October an increase of 5.4 per cent over a year ago. This is the season of year when production usually tapers off to accord with declining consumption.

Cement manufacturers right now are operating on their regular winter schedules and, while current demand is quiet as is usual at this season, the producers are confident that with the large building and construction programs now being planned a strong market will develop early in the first quarter and shipments will be heavy to all consumers.

The large producers say that while at present there are few large projects being figured that will take cement, gravel or crushed stone in heavy tonnage or volume, still the sand, gravel and crushed stone producers are drawing from winter storage to meet the demand, and in the cement industry the producers are filling up bins for the spring trade.

The Federal Government is leading the way for an immense building schedule for next year and states, municipalities and industries are rapidly falling into line.

Transit Mixers Report Progress in Industry

The Transit Mixers, Inc., which manufactures the Paris transit mixers is distributing some concrete facts. The year of 1929 has tended to prove methods of supplying a highly satisfactory concrete to the trade.

Transporting the mix

Some of the main considerations are proper provision for accurately measuring aggregates and cement; complete dry-mixing of aggregates and cement; a system for accurately measuring and adding an exact quantity of water, and a provision to insure a complete mixture of the whole; a system of operations that will insure delivery of the completed mix exactly where, when and in the quantity desired without segregation; and a method of mixing while discharging that delivers the mix in perfect form.

LEGAL INFORMATION FOR OPERATORS

Summary of 1929 Court Decisions, Affecting the Non-Metallic Mineral Industries

[*During the past year the higher courts have rendered several decisions unusually important to non-metallic products industries.*

These decisions involve such subjects as sale contracts, lease contracts, injuries to employees, taxation laws and railway transportation controversies.

Obviously, knowledge of the cause and outcome of these cases should well fortify readers to proceed with business transactions in a manner destined to avoid financial losses resulting from expensive litigations and probable adverse decisions.

Therefore, the purpose of this article is to give a concise and relative instructive review of important phases of 1929 *legal decisions.—Author.*]

The Law of Contracts

A great majority of litigations arise from misunderstandings or dissatisfaction of one of the two or more parties to a contract.

The laws relating to contracts are so well established that, generally, the outcome of a litigation may be anticipated with reasonable certainty by persons familiar with previously decided higher court cases on the subject. Also, it is important to know that the records of the courts prove conclusively that the majority of legal controversies involving contracts should never have existed had the contracting parties been informed of the established law.

A valid and enforceable contract is a transaction between two or more parties whereby each of the persons are obligated to do something. The contract may be written, oral, expressed, or implied. Generally, a verbal contract is equally as effective as a written one. However, the important difference between a written and an oral contract is that in litigations the parties must introduce testimony to prove the exact contents of an oral agreement, whereas the courts construe a written contract *strictly* in consideration of its contents. Moreover, "side" or verbal agreements have absolutely no effect to vary the legal obligations specified in a written contract.

On the other hand, it is important to know that it unquestionably is the law that, *after* a written contract has been signed, a *new* and *independent* oral contract may be substituted for the written contract. This is true because a written contract that is cancelled, whether orally or by writing, is void and a verbal contract made thereafter is enforceable.

Any person who violates a valid contract is liable in damages to the other party. Moreover, the instant one party violates any clause in a contract, or fails to perform his obligations, the other party may cancel the agreement. This law applies with respect to all kinds of contracts, including leases.

Gravel Lease Held Forfeited

In Drew Gravel Co. v. Stell, 20 S. W. (2d) 609, it was disclosed that the Drew Gravel Company leased property from which to mine gravel. The lease contract contained a clause in which the gravel company agreed to pay a stipulated amount for the gravel mined and to pay $50 rental each month no gravel was removed, but that under no circumstances should the property remain idle for more than three consecutive months.

The gravel company failed to pay the rent promptly and, also, permitted the property to remain idle for a longer period than three months. The owner filed suit to cancel the lease.

The counsel for the gravel company argued that its lease should not be cancelled through the nonpayment of the rent, and failure to mine gravel, for the reason that no demand for the rent was made by the owner. Moreover, the managing officer of the gravel company testified that he had agreed that the owner should draw drafts each month through a local bank and which would have been paid had they been presented. Also, the manager for the gravel company offered to pay the rent to the owner the day the suit was filed. However, it is interesting to observe that the higher Court held the lease forfeited, saying:

"It is admitted that for five consecutive months that plant had not been operated, nor had the rent been paid. . . . The right to cancel the lease existed unless it had been waived. . . . It is true that the lessee (gravel company) offered to pay the past due rents; but, if the right to cancel had then accrued, this right was not destroyed by the belated tender."

During the year 1929 many firms dealing in non-metallic products have encountered unexpected expenses as a result of having to pay taxes on goods shipped into another state. In other instances, heavy financial losses have been sustained by firms that have been prevented by the foreign state law from suing persons who refuse to fulfill the obligations of contracts.

The law is well established that no state, or city, or county, may legally enforce tax or other restrictive laws regulating business firms located in different states providing the transactions are strictly *interstate*. In fact, such laws are in direct violation to the Constitution of the United States and therefore invalid.

However, if the transaction is *intrastate*, the state in which the goods are shipped may enforce any reasonable law defining the duty of the shipper.

Theoretically, any firm, corporation, partnership or person who ships non-metallic products into another state and *retains title to it*, is deemed transacting intrastate business or "doing business" in that state.

For example, in the leading case of Eisenmayer Co. v. George E. Shelton Co., 3 S. W. (2d) 688, it was disclosed that a shipper shipped products to a warehouseman in the state of Arkansas. The warehouseman was instructed by the shipper to whom the merchandise should be delivered. Controversy developed between the purchaser and the shipper and the latter filed suit to collect the account.

During the trial the counsel for the purchaser disclosed that the shipper, believing this arrangement to be an *interstate* transaction, had failed to comply with the Arkansas laws regulating foreign corporations "doing business" in the state. One provision of this statute is that a foreign corporation transacting intrastate business within the state, not having complied with the Arkansas laws, cannot maintain a suit against a citizen.

It is important to know that the higher court held that since the shipper had not complied with the Arkansas state laws, *he could not maintain the suit.* This Court said:

"We hold that the undisputed facts show the transactions in this state were intrastate in character, *which constituted the doing of business in this state* in violation of the law, and that appellant (shipper) cannot maintain this action."

LATEST NEWS FLASHES

New Sand and Gravel Company at Elizabethton, Tenn.

The Watauga Sand & Gravel Company has been formed at Elizabethton, Tenn., to produce sand, gravel and crushed rock in all sizes obtained from the Watauga river. Plans for the construction of a $25,000 plant are reported to be underway.

White Cement Plant Begins Operation in California

According to a press dispatch, the first cement plant producing white cement on the West Coast has begun operating at Chubbuck, Cal. The plant is owned by the National Portland Cement Company. Another new plant owned by the company at Houston, Texas, will begin operations some time this month, it is reported.

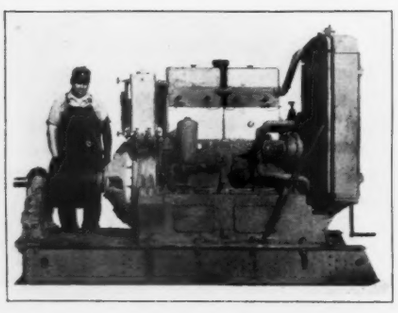
Columbia Plans Cement Plant in Southern California

National City, Cal., is to have a $3,000,000 cement plant to be erected by the Columbia Cement Company. Land has been acquired and work started on a quarry. When completed, the plant will have a capacity of 3,000 barrels per day, according to advices from National City.

Buda Exhibits Big Line at Road Show

This year The Buda Company will show the most complete line of engines ever exhibited at the American Road Builders' Association annual display.

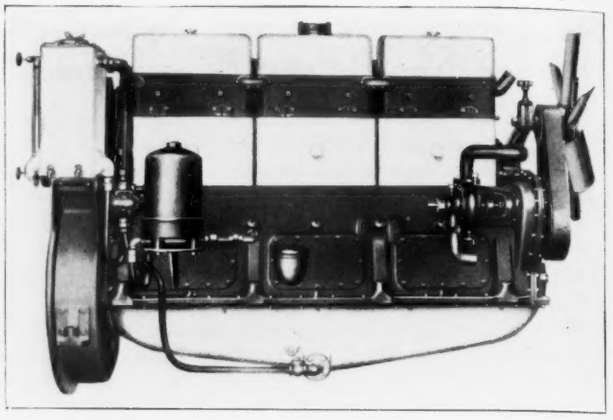
In view of the rapid strides made the past two years in introducing the



Four-cylinder diesel power unit

diesel engine, the Buda-M. A. N. diesel engine will receive prominent position in this display. A 120-hp. diesel power unit will be shown, mounted on structural steel base, with radiator, clutch and pulley for belt drive. A 180-hp. diesel engine will also be exhibited.

Buda-M. A. N. diesels are extremely compact and the portability of the power units is an important feature. These engines operate on the four stroke cycle principle and are adapted for continuous or intermittent duty, operating from 400 to 1,000 r.p.m. They are now in service in such classifications as shovels, locomotives, oil field, compressors, generators, dredges and cotton gins.



Buda-M.A.N. 6-cylinder, 180-hp. solid injection engine

New Series Gasoline Engines

A six cylinder model of a new series of gasoline engines by Buda will be exhibited for the first time at the Twenty-first Annual Show. This new series operates at higher speeds and has many features that should appeal to the road construction industry. A few of these features can be mentioned here:

1. Crankcase ventilation. Relieves crankcase pressures and aids in preventing oil leaks.
2. Specially designed dirt - proof breather and oil filler cap.
3. Crankcase and cylinders of chrome nickel alloy iron. Longest wearing iron known today.
4. Main oil distributing line rifle-drilled full length of crankcase. No loose oil pipes.
5. Rifle-drilled, long-centered connecting rods. Positive lubrication of piston pin with oil under pressure.
6. Seven - bearing, close - coupled crank-shaft of large diameter, to withstand excessive shocks and permit of extremely smooth operation.
7. High velocity combustion chamber of new and advanced design.
8. High velocity water pump of large capacity. Stainless steel shaft and leak-proof bearing.
9. Safety legs on engine housing. Prevents breakage of engine housing or crankcase by extreme impact on front of frame.
10. High velocity lubricating system.
11. Balanced distribution intake manifold—equipped with hot spot and heat control.
12. All main bearings, upper and lower, replaceable without removing crankshaft.
13. Valve tappets clustered—for accessibility in assembling and service.
14. Provision for oil filter.
15. Provision for fuel pump.
16. Removable cover for cylinder water jackets. To permit removing corrosion or deposits around cylinders.

The Buda Company will also show the following standard models of heavy duty gasoline engines:

		Bore	Stroke
JH4	(4 cylinder)	6	x 7⅛
JH6	(6 cylinder)	6	x 7¼
YTU	(4 cylinder)	4½	x 6
FR	(4 cylinder)	5½	x 6½

The diesel models are:

D4-30	(4 cylinder)	6	x 8
D6-30	(6 cylinder)	6½	x 8¾

The Buda Company booth will be No. 238, in charge of R. K. Mangan, sales manager industrial division.

Large Stone Quarry Opens Near Buncombe, Ill.

The National Quarry and Stone Company is preparing to install a manufacturing plant near Grasshopper Bridge north of Buncombe, Ill. We are informed that a spur switch of four tracks is to be put in and used jointly by the C. & E. I. and C., B. & Q. for shipping out the stone. The massive limestone ledge, it so happens, parallels the main lines of the two railroads, making it convenient in locating the crusher just off the main tracks. The C. & E. I. utilizes many tons of these limestone blocks in abutments and pillars to support the high steel bridge that spans a deep gorge with a little stream known as Grasshopper creek.

The location of this industry at Buncombe will be of much benefit to local farmers, and it would be something of a task for the imagination to visualize the changes that the next few years may bring about through the wider use of limestone on the soil that will be bound to follow the new enterprise.

Back of the material things, the dynamos, the crushers, and conveyors, the grist of limestone, of limedust, of building blocks, that is soon to be known as the National Quarry and Stone Company plant, lies the story of the idea of the explorer.

Some time during the month of July, 1928, a field representative of the State Geological Survey made a trip through that part of the Ozark

Creeper loader

Clam-shell bucket

range. He was looking for a big limestone deposit which he had heard was near the town of Buncombe. In due time the report of this department came in the form of a letter directed to the land owner of the Grasshopper creek outcropping.

The report was quite favorable, so it was decided to have a private geologist and engineer make a more extended investigation of the property. Considerable time and thought was given to this investigation with a satisfactory conclusion. This more extensive investigation disclosed a much larger deposit of limestone than was at first estimated, and further, that the quality was of an especially fine grade, suitable for almost every purpose to which limestone is adapted.

These reports at length reached men with the instinct of development and with the vision of the future of the limestone industry, finally resulting in the incorporation of the National Quarry and Stone Company now in progress. With ample resources, we are informed that a modern plant is to be installed operating on a large scale and equipped to handle the stone at a comparatively low cost of manufacture.

Not only will it quarry and crush stone, but building stone and concrete blocks will be manufactured as well; stones will be cut, polished, and prepared ready for the building trade, and concrete blocks of various designs will be made.

According to the Buncombe *News Reporter*, the community is glad to welcome the coming of this great organization and commends the men who have given of their thought and energy as well as the money to make it possible.

Haiss to Exhibit Line at Road Show

George Haiss Manufacturing Company, Inc., announces that it will exhibit in booths 135 and 140 at the 1930 Road Show in Atlantic City. This company manufactures truck-loaders, portable belt conveyors, clamshell buckets, cars, cut-off gates, unloading and loading machinery, hoisting engines, revolving screens, elevators, conveyors and other equipment for the pit and quarry industries.

The products to be exhibited include the new Haiss excavator, Model 27 creeper loader, latest type portable belt conveyors, and a complete line of clamshell buckets. The equipment

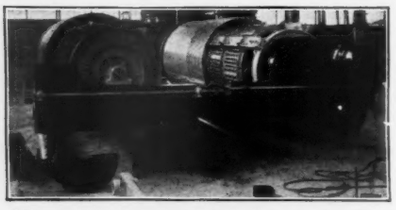
Portable belt-conveyor loader

will be illustrated by moving pictures.

Those in attendance will include A. W. Haiss, G. E. Haiss, R. C. Haiss, W. H. Bosworth, D. H. Fair, C. T. Bromhall, W. C. Prince and W. D. Smyth.

Milwaukee Firm Ships Huge Gravel Plant to Russia

Eight carloads of gravel plant machinery consigned to the Russian soviet government, have been shipped by the Smith Engineering Works of Milwaukee. The order was placed through the Amtorg Trading Company, the official purchasing agents for the soviet government. The gravel



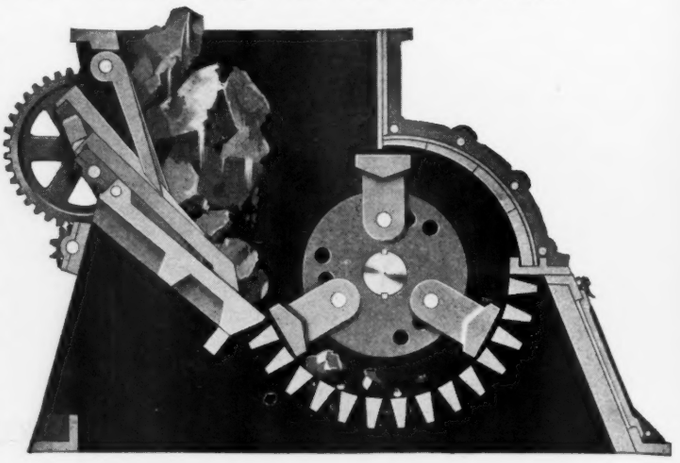
Screens for Russian plant

plant, when completed, will be the largest one outside of the United States. It will be placed in operation next spring and will furnish raw material for the construction of a hydro-electric plant near Leningrad.

The shipment consisted of two complete and identical plants, each having a washing and screening capacity of 300 cu. yd. an hour. The main washing and screening cylinders of the Telsmith Hercules washing screens are 72 in. in diameter by 24 ft. long, while the sand jackets are 99 in. in diameter by 14 ft. in length. Each of the screens weighs 30,000 lbs. and has a capacity of 300 cu. yd. per hour. Both screens were equipped with Timken tapered roller bearings.

This Crusher Cannot Clog with Wet or Soft Feed

One of the outstanding installations of the year is that of a rock-crushing and concrete-mixing plant beneath Lake Michigan, in a tunnel that extends two miles from shore. This project is one for furnishing the city of Chicago with its supply of pure water.



Pusher-type hammer-mill

The tunnel has a diameter of 16 ft. and is excavated through limestone. The bore is finished with a heavy lining of concrete. Prior to the present subterranean installation all aggregate for the concrete was hauled to the breast of the tunnel from outside sources. Now as much of the raw rock as is required is put through a Williams Pusher-type hammer crusher and reduced to 1½-in. concrete stone on the spot.

The rock, as blasted, is saturated with water, and so sticky as to clog other kinds of crushers. In the Pusher crusher, however, there are two rams, operated from a crank-shaft, that work back and forth, to push the rock into the path of the hammers.

This machine is successful in reducing clay, shale, and other soft rocks. Cement plants that crush loose and hard materials together are finding this machine the solution of previous difficulty. The crusher is built in capacities from 50 to 300 tons per hour. It is built by Williams Patent Crusher and Pulverizer Co., St. Louis, Mo.

Koehring Will Exhibit New Products at Road Show

Koehring Company, Milwaukee, Wis., will include two new products, the Dumptor and the 401 Shovel, in its large exhibit at the Road Show in Atlantic City. The Dumptor is the latest addition to the Koehring heavy duty line of pavers, mixers, shovels, pull shovels, cranes, drag-lines, and is distinctly a new load-carrying unit, the first and only one of its kind on the market, according to the manufacturer. With full multiplane traction for mobility and easy handling over most any kind of ground, with the ruggedness and liberal drawbar power of a tractor, and with the bull dozing advantages of the dump body in discharge position, the Koehring

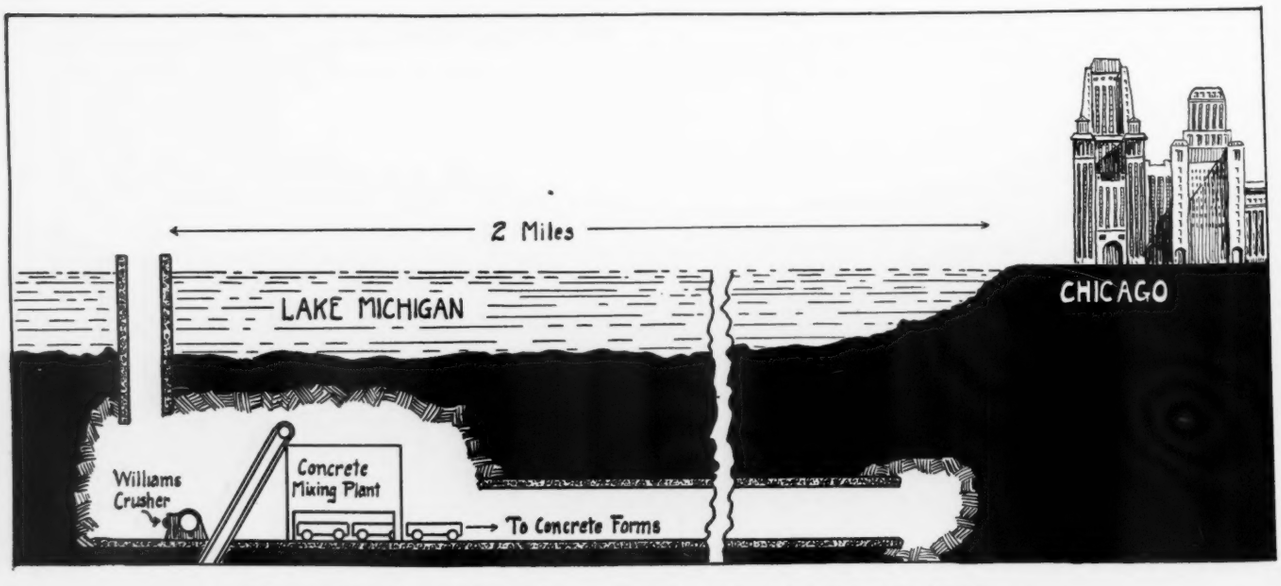


Diagram of rock-crushing and concrete-mixing plant beneath Lake Michigan

Model 401 heavy duty shovel

Dumptor is a heavy duty unit embodying the profit-earning and dirt-handling features of truck, tractor and bull dozer. The unique design of the Dumptor includes twin four-cylinder engines, front end dump, low loading height and reinforced body of exceptional capacity—struck level of 5 cu. yd., heaped load of 6½ cu. yd. and more.

To its line of shovel-pull, shovel-crane-dragline excavating equipment, the Koehring Company has added a new model—the No. 401 which will also be shown at Atlantic City. The Koehring 401 heavy duty shovel has a 1-yd. dipper on 16-ft. dipper sticks. When built as a crane, it has a capacity of 13 tons at 12 ft. radius with a 50 per cent safety factor. In addition to several distinctive Koehring features, the new 401 embodies an outstanding change in design which heretofore has never been incorporated in a machine of this type. All the gears, except the turntable gear and swing pinion, are enclosed and run in oil. All the machinery shafts, which enter into the operations of hoisting, drag, dipper crowd, boom hoist and swing, are mounted on roller or ball bearings.

The Greater Koehring 27-E paver will be of interest at the exhibit. Brought out a year ago, this paver proved itself during the past season to be an achievement in fast operation. Each one of the many extraordinary features, including the automatic operations, has been developed in accordance with the Koehring principle of heavy duty construction. Every bearing in the whole power transmission line—skip hoist, drum drive, boom and bucket drive, even idler sheaves and bucket rollers are mounted on roller or ball bearings.

Other Koehring products to be found in space No. 340 are the heavy duty shovel No. 601 and the heavy duty crane No. 301. The 601 shovel is the largest Koehring excavator and is built with a 1½-cu. yd. dipper on 16-ft. dipper sticks. It is powered with a Wisconsin 6-cylinder 6-in. by 7-in. engine, running at 925 r.p.m. The 301 crane has a capacity of 10 tons at 12-ft. radius with a 50 per cent safety factor. Built as a shovel it has a ¾-yd. dipper on 16-ft. dipper sticks.

This exhibit will be grouped with the Insley excavator, the new Smith 84-S Weight-Mix, the new Parsons No. 25 ditcher and the Kwik-Mix tilting mixer to form the National Equipment Corporation display, which will be located on the stage, main floor, of the auditorium.

Form Diatomite Company in British Columbia

Canada Diatomite, Ltd., has been formed at Victoria, B. C., Canada, to develop 323 acres of deposits at Quesnel, B. C. A grinding plant is to be erected at Victoria. G. A. C. Cox, J. A. Kenning, E. H. Groos and E. O. Weston, all of Victoria, are members of the firm.

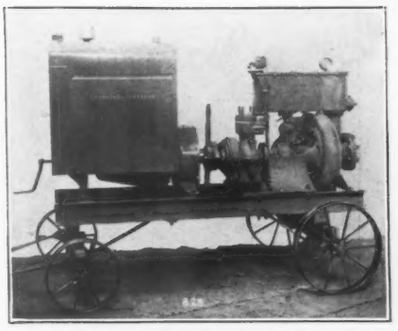
Wisconsin Company Adds New Plant Equipment

The Outagamie Limestone Co. of Black Creek, Wis., has just installed $10,000 worth of new machinery at its plant. The new equipment includes a 15-in. by 38-in. Wheeling jaw crusher and a Smith vibrating screen. The output of crushed rock and ground limestone, which the company produces, is expected to be increased by 100 cu. yd. a day, according to John Homrig, president, as a result of the improvements.

The company has complete electrical equipment in its plant and quarry. From June to November agricultural limestone and crushed rock for construction purposes is produced, about 225 carloads being shipped during the past season. During the winter months the plant produces chicken grit and calcium carbonate to a large extent.

Clifton, Illinois, Plant in New Location

The Iroquois Sand and Gravel Co. of Clifton, Ill., has leased 320 acres of gravel deposits and has moved its plant to the new location. D. M. Meentz, president, reports that the gravel is 35 feet deep with the overburden averaging 3 feet.



A portable pump

Domestic Engine to Exhibit

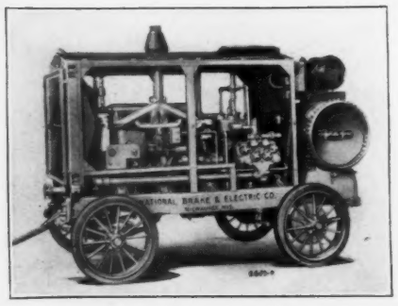
The exhibit of the Domestic Engine & Pump Co. of Shippensburg, Pa., showing its line of dependable power pumps for contractors' use will be shown in Space 201, at the 1930 Road Show. In this exhibit, the 1930 model of the giant road-builders' pump will be shown, together with the improved line of automatic priming centrifugal pumps, that have proved so popular with contractors for the last two years.

This new line of centrifugal pump units will be of special interest to every one having need of dewatering pumps. It is an established fact that the automatic priming feature has increased the value of the centrifugal pump as a dewatering unit by quickly handling the water ordinarily adapted for centrifugal pumping and also has permitted its successful use in drawing shallow depth water as well as increasing the practical suction lift of the pump up to 27 ft.

The domestic automatic priming centrifugal pumps are said to be more than simply an ordinary centrifugal pump equipped with a priming device. They are especially designed to withstand the extremely severe duties of operating intermittently against full load and no load, a condition frequently encountered with this type of unit.

These units are especially valuable on sewer, bridge, and excavation work. As long as there is enough water to fill and seal the suction line, the automatic priming device will keep the pump primed. This makes an ideal unit when pumping from a source of supply where the inflow is much less than the rated capacity of the pump or when the inflow is intermittent.

The ability not only to lift the water but also to force it through a line of pipe or hose from the excavation to a higher level than the pump or to a convenient place of disposal, gives this automatic priming unit a distinct advantage over the pumps usually offered for dewatering work.



Portable engine-driven compound air compressor

Firms Combine Exhibit For Road Show

The National Brake & Electric Co. and Milwaukee Locomotive Mfg. Co., of Milwaukee, Wis. (subsidiaries of Westinghouse Air Brake Co. of Pittsburgh, Pa.), will occupy Booth No. 457 at the January Road Show and will have on exhibition the following equipment:

The National Brake & Electric Co. will exhibit its regular line of portable engine driven compound air compressors which are built in sizes from 110 to 330 cu. ft. displacements at 100 pounds pressure. The illustration shows a National "WN-33" compressor of this type.

The Milwaukee Locomotive Mfg. Co. will exhibit a standard Milwaukee Type "H-8" 8-ton, 36-inch gauge gasoline locomotive. The locomotives are built in sizes from 4 to 35 tons and for all gauges of track. The illustration shows a Milwaukee "H-8" 8-ton locomotive.

The following members of the National Brake & Electric Co. and Milwaukee Locomotive Mfg. Co. will be in attendance at the show: P. L. Crittenden, vice-president and general manager; F. B. Peterson; A. M. Poole; W. L. Berghoefer; and J. S. Franco of Milwaukee and O. S. Compton of Philadelphia, Pa.

U. S. Gypsum Installs Derrick Drills

The United States Gypsum Company at Alabaster, Michigan, has made an installation of Gardner-Denver derrick drills this year. The holes are from 18 to 20 ft. deep and are drilled at the rate of three to four holes per hour.

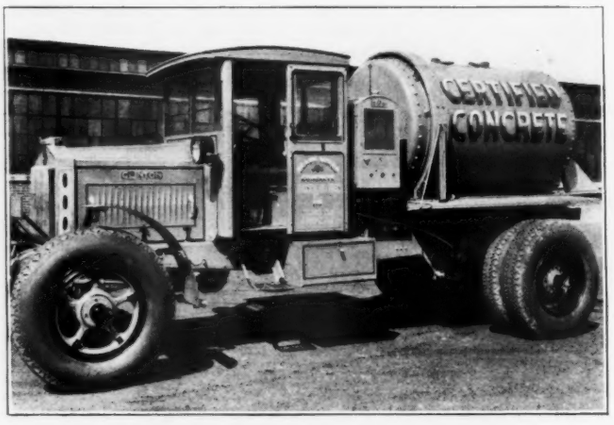
Perfex Corporation to Exhibit At the Road Show

The Perfex Corporation will exhibit this year at the Road Show for the eighth time, in Space 151, Atlantic City, N. J., January 11-18, 1930.

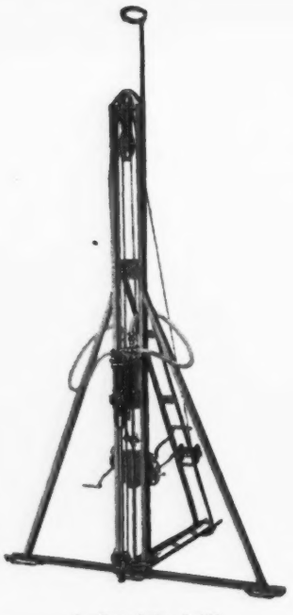
A full line of radiators will be exhibited and it is announced that these

New type radiator

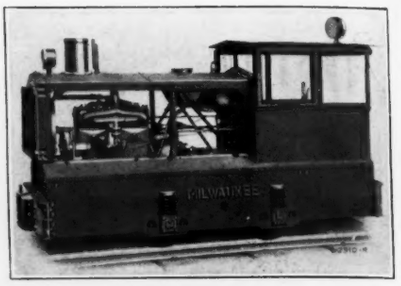
will show many new refinements made during the past year. Included in the exhibit will be Perfex cellular core radiators and radiators with the well-known Perfex all copper staggered tubular type of core.



The Clinton concrete carrier



A derrick drill



Standard gasoline locomotive

Representatives at the show will be Roger Birdsell, vice-president and sales manager, A. C. Owen, Cleveland representative, and R. W. Wilson, sales engineer.

Clinton Motors to Exhibit at Road Show

The Clinton Motors Corporation, manufacturer of the Clinton Concrete carriers, will exhibit a number of its concrete conveyor cnnditioners at the Road Show. These revolving bodies are said to be scientifically correct in addition to their strength and simplicity, and the trade name of "Clintonized Concrete" is apparently accepted as a final link in contractor service.

The exhibit will include one 3-cu. yd. concrete truck with high-lift hoist; two Mack trucks equipped with a 3-cu. yd. and 2-cu. yd. concrete conveyor-conditioners and high-lift hoists; two White trucks, equipped with 3-cu. yd. and 2-cu. yd. concrete conveyor-conditioner and high-lift hoists; and one Chevrolet truck with 6-wheel attachment, equipped with 1-cu. yd. concrete conveyor-conditioner.

As indicated, the new features include Clinton concrete conveyor-conditioners mounted on various makes of motor-truck chasses and with high-lift hoists especially designed for the purpose; the smaller Clinton concrete conveyor-conditioner for mounting on Ford and Chevrolet trucks with 6-wheel attachments.

William R. Goudie well known in mechanical rubber circles on the Pacific Coast has recently taken a position with the Pioneer Rubber Mills as manager of industrial sales. Mr. Goudie will make his headquarters at the general offices in San Francisco.

Opens Amarillo Office

The Panhandle Sand and Gravel Co. of Lubbock, Tex., has opened an office in the Amarillo Building at Amarillo, Tex. The company purchased a plant at Quitaque, Tex., some time ago and has advance orders for 2400 cars of gravel, which will keep the plant operating at full capacity for some time to come.

Fuller Company Acquires New Handling System

The Fuller Company of Catasauqua, Pa., manufacturers of the Fuller-Kinyon conveying system, announces the acquisition of the Airveyor from the Guarantee Construction Company.

The Airveyor has been on the market for a number of years and several hundred installations are in use handling grain, food products, soda ash, lime and other similar materials, and it has proven its adaptability for unloading bulk materials from boats and railroad cars.

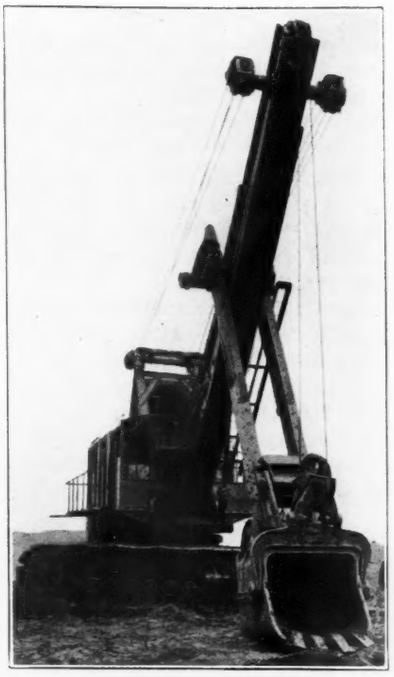
With the Airveyor and Fuller-Kinyon conveying system, the Fuller company is now in a position to offer a complete line of unloading and conveying equipment for handling pulverized, finely divided, granular and crushed materials.

Use Indiana Limestone In Far Off Alaska

Twenty carloads of Indiana limestone have been ordered by the government for use in constructing a new post-office building at Juneau, Alaska. The building will be one of the first permanent structures to be erected in that territory, where the temperature often falls to 60 degrees below zero. The shipment is being made this month so as to be ready to begin construction in the spring.

Lorenson-Matthews Has Addition to Plant

The Lorenson-Matthews Manufacturing Company announces the completion of a large addition to its plant. It is in a position to offer a complete service from design to fabrication and installation if desired. It makes a specialty of chutes, buckets, cars, cages, shaking screens, conveyor troughs and flights, loading booms, and builds other equipment such as steel stocks, breeching, tanks, towers and storage bins, according to specifications.



P & H model 900 diesel or electric 3½-yd. shovel

Two P & H Models Developed During 1929

Two new large excavators, especially suitable for pit and quarry operation, have been put on the market this year by Harnischfeger Corporation. They are the P&H Model 800 (2½ yd.) and Model 900 (3½ yd.). Both machines are convertible to shovel, dragline or clamshell-crane. A number of outstanding advantages are worthy of mention.

Shovel booms of "fish belly" design are of heavy, reinforced box-section steel. Large diameter sheaves at boom point and in boom hoist tackle blocks assure longer cable life. Shipper shaft is held in a strong unit steel casting which extends well down the top side of boom, and is securely riveted to the boom. The boom foot casting is also exceptionally rugged. Dipper sticks are of selected white oak, heavily armored and reinforced with steel plates. Dippers for rock work are entirely of manganese steel, and are heavily reinforced at point of fastening to sticks. A simple air-operated dipper trip is standard equipment on both the 800 and 900.

The well-known P&H positive and independent chain crowd is a feature of the Models 800 and 900. The full power of the motor is behind the crowding motion to force the dipper into the toughest bank for a full load at ever bite.

These large excavators are designed to stand up under the hardest usage. Massive unit steel castings are used for all main frames, which include the revolving base (weighing in excess of 17,000 pounds on the Model 900), crawler frames, carbody, and drum sidestands. Motors are mounted directly upon the revolving base, not on structural sills, as is commonly done on machines of these sizes. Hyatt or Timken bearings are used on all shafts above the deck to assure ease of operation. These bearings also conserve power and thus reduce costs.

Crawling tractions of the 800 and 900 are of typical P&H double sprocket drive design. This type of crawler is used for these big machines, since it has stood up so well over many years' service on other P&H models. Weight of machine is distributed to crawler links through a number of smaller rollers which adjust themselves to the contour of the ground.

Mobility of these large excavating units is remarkable. With all their size and necessary weight, they can be steered as easily as any P&H, from the cab, regardless of its position. No ground man is necessary and a turn can be made in any radius.

Diesel or electric power is optional for the Models 800 and 900. The diesel motor is well-suited for rock work because its torque or lugging power actually increases when the motor is slowed down by heavy digging. Diesel fuel costs are also exceptionally low. The diesel motors are of the newest design, developed jointly by P&H and Atlas Imperial Engine Co. for the exacting duty of excavator service. They are 6-cylinder, 4-cycle, mechanical injection, fully enclosed and dust-proof. Standard motors are used for the electric powered machines. All of these features, plus fast swing and hoist speeds, combine to make the Models 800 and 900 excellent units for large scale excavation and loading.

Manitowoc to Exhibit At Road Show

Manitowoc Engineering Works, Manitowoc, Wisconsin, will exhibit a Moore speedcrane and a Moore speedshovel in space 319 in the Auditorium during the Road Show. These two machines are of the latest types, including such new developments as the independent shovel crowd, which is operated independently of any hoisting action, and permits the dipper to be crowded out or in at will. No riding of operating levers is necessary in crowding or in holding the load with brake to any desired height. This shovel has unusually free dumping clearances and trucks may be

Latest model Moore speed shovel

loaded on the surface with the shovel operating in eighteen to twenty foot depth.

These machines employ many automotive principles of construction, such as the patented gear shift, which permits of attaining all of the various operations with a fewer number of gears; gears and shafting are made of chrome nickel forged steel with cut teeth and heat treated; all travel gears and boom hoist gears are fully enclosed, operating in an oil bath.

The Moore speedcranes still retain the accelerator control of the motor, giving variable speed and power when required, and are the pioneers in adopting this device, which has been standard equipment on speedcranes for over three years.

A lower center of gravity is attained by the fact that the few number of gears, etc., are installed below the floor line, which, with the boom hinge being nearer the center pin, permits the handling of heavy loads at a much greater radius than would be possible otherwise.

The speedcrane is especially adapted for setting steel, stone, etc., where heavy loads are to be handled and accurately placed. Through the means of a plunger type clutch, loads may be raised or lowered a fraction of an inch and no riding of operating levers is needed.

A full crawler lock which locks both crawlers to or from the work also serves as a safeguard when traveling on hills or out of deep excavations. When placed in forward movement position the machine may be moved in that direction at will, but cannot go backward until released.

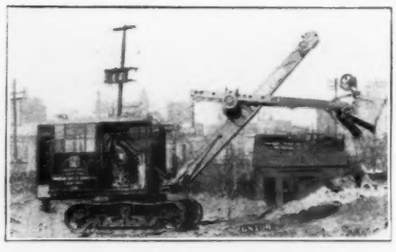
Steering on the improved speedcrane is by means of a steering lever at the operator's station. There are three positions on each drive sprocket —pulling or traveling, idle and locked positions. When locked the crane may be turned within its own length.

These machines are sold including all accessories such as electric generator and starter, batteries, starting button and throttle conveniently located at operator's station, full steel all-weather cab which may be opened fully during warm weather or closed during stormy or rainy weather.

Another recent development is the extended crawler for application on cranes used on very soft or marshy ground. This arrangement extends the present crawler from 11 ft. 5 in. to 15 ft. 10 in., with both ends slightly raised above the ground level. This extension may be applied on any standard speedcrane in the field, making it unnecessary to use floats only in exceptionally soft and marshy ground as the pressure is reduced to approximately 6.8 lbs. per square foot.

American Hoist Will Exhibit Improved Gopher at Show

The American Hoist and Derrick Co. of St. Paul, Minnesota, will exhibit an "American Gopher" gasoline operated one yard combination shovel-crane or dragline. The exhibit will be so arranged as to permit operation of all motions except the swing and that alone is not arranged for power demonstration on account of lack of space.



American gasoline operated machine

The American Hoist & Derrick Co. does not advocate yearly models but continues to improve its products whenever and as often as the occasion presents itself. The simplicity and correctness of design, the ease and silence of operation and the excellent reputation of the "American Gopher" have brought satisfaction to owners. The American Hoist and Derrick exhibit will be in space 209, the Atlantic City Convention Hall. Members of the A. H. & D. Co. organization with a coast to coast acquaintanceship will be there to welcome their friends and do the honors generally.

Orders Large Crushers

During the year the Traylor Engineering and Manufacturing Company executed two orders for worthy-of-notice gyratory crushers, each for a 54-in. bulldog, a new size and in some respects the largest breakers built by the company, for, while in the past several 60-in. machines were produced, these 54-in. crushers are of extremely heavy design, presenting many problems in construction.

Fifty-four-in. gyratory crusher

The 54-in. crusher is built with the frame in three sections, and weighs nearly 350 tons and is capable of a production of upwards of 10,000 tons daily to 6-in. ring size. Ten full carloads comprise complete shipment, three of which cars being required to be of special well type.

World's Largest Clamshell Bucket at Buffalo

A 16½ cu. yd. clamshell bucket has been shipped by the G. H. Williams Company to the Donner Steel Company at Buffalo, which, so far as known, is the largest clamshell bucket ever built. From the bottom of its scoop to the top of the head, the bucket measures 18 feet 9 inches in height. When it is lowered open, its scoops have a spread of 19 feet and cover an area of 133 square feet.

This bucket was designed especially to increase the capacity of a crane already in use on the docks of the Donner Steel Company. In the design it was necessary to conserve every pound of weight possible, to enable the bucket to handle the greatest possible tonnage with the available power. Accordingly, this bucket weighs only 28,000 pounds.

NEW MACHINERY AND SUPPLIES

Some Machinery Developments of 1929

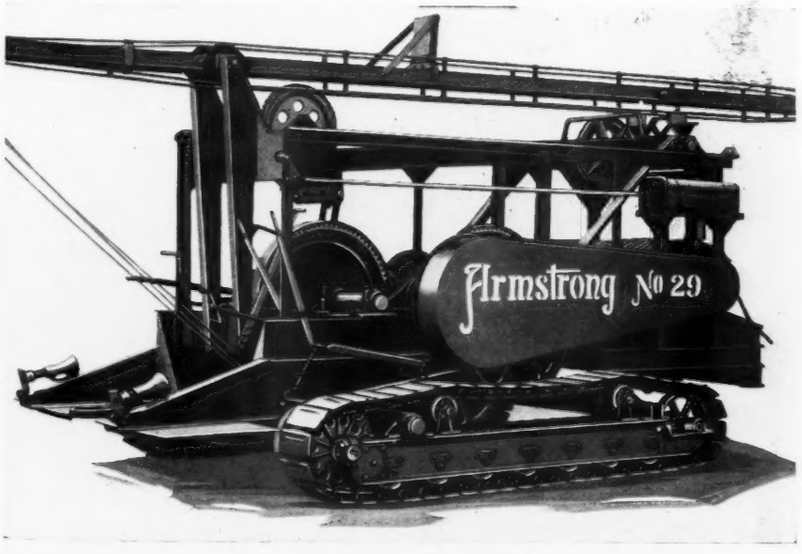
EVERY year brings new developments of machinery used in the pit and quarry field. During the year, each issue of PIT AND QUARRY *has contained data on their developments and applications to the fields. In this Annual Number, we present information, covering a large number of* 1929 *developments that have not been previously discussed, as well as a number on which additional data have been secured. While this review does not presume to cover all the mechanical developments of the year, it contains a large proportion of them.*

Improved Blast Hole Drill

Outstanding among the improvements in churn blast hole drills for the year is the Armstrong No. 29 blast hole drill—an all steel unit, mounted on full length crawler type wheels.

This machine is claimed to be a distinct departure in the building of blast hole drills. Both the frame and derrick are electrically arc-welded, giving maximum strength and rigidity with minimum weight. The machine moves under its own power, being designed for either gas or electric drive. The full length crawler wheels prevent miring down in soft ground as well as skidding or side-slipping in climbing steep grades it is claimed.

Every part of the outfit is designed and built with special reference to hard rock drilling in mines and quarries, and will carry 2,000 pounds of tools. Only the highest grade material, such as Timken roller bearings, Alloy steel shafting, and steel machine cut gears, enters into its construction according to the manufacturers.



The No. 29 blast hole drill

New HGX "Hygrade" Worm Speed Reducer

Foote Bros. Gear and Machine Company has recently developed a new addition to their "HYGRADE" line of anti-friction worm gear speed reducers, known as the HGX type. This type is an intermediate step between the HGS single reduction unit and the HGD double reduction unit. The HGS single reduction unit with right angle drive has a maximum ratio of 58 to 1, at which the maximum efficiency can be obtained. The HGD double reduction provides for all ratios over 58 to 1, and up to 5,000 to 1, but the shafts are parallel.

The new type HGX, a step between the HGS and the HGD provides higher reduction ratios than standard ratios listed for the type HGS Single Type "HYGRADE" reducer in Foote Bros. "Gear Problems" catalog, and still maintains the right angle drive where ratios higher than single reduction ratios are desired.

This reducer consists of a standard "HYGRADE" single reduction worm reducer with a set of helical gears mounted on the worm shaft and enclosed in a suitable housing. The high speed element of this reducer consists of a set of wide faced helical gears having a maximum ratio of 5 to 1 or increasing by four times the standard reduction ratios of the HGS single reduction unit.

The adopted ratios as standard for the helical gears or high speed end of the HGX unit are 1 to 1, to be used only for reversing relative rotation of worm and worm gears, 2 to 1, 3 to 1 and 4 to 1 which is the maximum reduction. The maximum motor speed which can be applied to the high speed shaft of this HGX unit is 4,000 RPM.

Like all the other type "HYGRADE" reducers, this type is a fully enclosed, self lubricating unit, having anti-friction bearings, bronze worm gear and nickel steel carbonized, hardened, ground and polished worm.

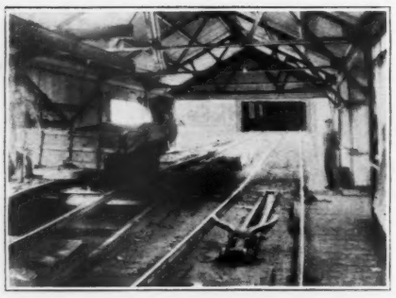
Where higher than standard single reduction ratios are required with the right angle drive still maintained, it provides a dependable, quiet and highly efficient drive.

New Six-Cylinder Engine

The latest addition to the line of 6-cylinder engines built by the Waukesha Motor Company is the Waukesha Despatch Six. The new engine is built in two sizes, 219 cu. in. and 255 cu. in. piston displacement, and is featured by many new developments. Tests have shown that the engine, with its newly developed manifold, can be run at a low idling speed for periods of an hour or more, and then be given the gun and the load picked up without bucking. There is also incorporated the Waukesha ricardo head, oil level equalizer, and an integral oil filter.

Electric Reciprocating Car Feeders

The new Roberts and Schaefer electric reciprocating car feeder is superior to some older types of car haul in numerous respects. Lugs which bend and pull off, and derailment injuries to track and the wrecking of cars due to lug troubles are now eliminated. This car feeder has but one carriage in which there is a forked dog or duck hook, designed especially for the car, which engages the axles near the bearing wherever there is a tendency to bend the axles; or it engages the bearings; or the ends of cars, depending on the type of car used. This dog is held up by a positive spring action, insuring its engagement of the cars at all times, though it permits the passage of the locomotive over it. The carriage has



Reciprocating car feeder

a long wheel base to distribute the eccentric pull, and extra guide wheels to prevent the bending of the guides. The load is picked up against a powerful spring cushion.

The unit is of rugged construction. The carriage runs forward and back on heavy I-beam guides mounted on cast steel supports. There are no guides required for the return strand or lower strand of chain. The chain used is a short pitch, permitting the use of small sprocket wheels. The drive unit consists of a motor, speed reducer and brake.

Operation is simple; by pushing a control button the carriage travels forward for the distance the stroke is set, automatically reverses and returns to its starting position and stops. It is not necessary to push a button to change its direction or stop the carriage as this is automatically done through the electrical control. Emergency buttons, however, are provided so that the carriage may be reversed at any point of the forward stroke or stopped, as desired. The ability to vary the length of stroke is a big asset. In fair weather conditions when the cars are moving rather freely it may be necessary to take but a partial stroke and permit the cars to drift the remainder of the distance by themselves. In bad weather, or as the cars become old and do not move as freely, it may be found necessary to take a considerably longer stroke to deliver the cars to the point desired. A simple adjustment of the switches permits making this change. Operating the car feeder by remote control from any position is possible as required. In the above illustration the dump operator controls the operation of the car feeder. In this way the cars are delivered to the car-dumper as they are required; otherwise the time for dumping would be entirely determined by the method of feeding the cars to the car-dumper.

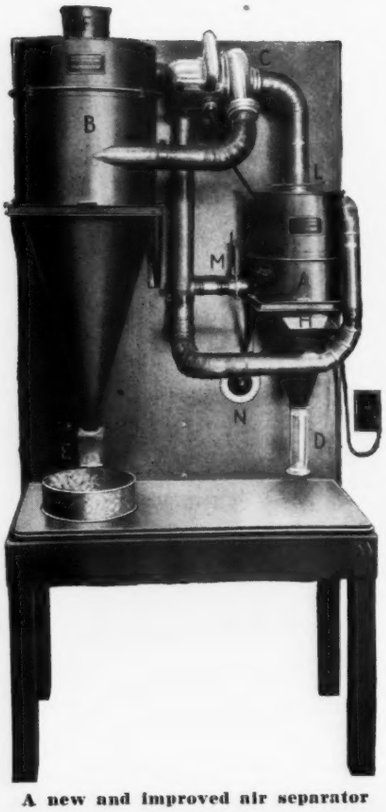
These feeders also make excellent trip-makers, saving grading of track for empty holes and eliminating bumping together of cars after running a long distance down an empty siding. Construction of a knuckle over which the cars are fed is also eliminated in order to get sufficient grade so that the empties will run away.

For service as a trip-maker this electric reciprocating car feeder is started by a switch operated by the car itself as it comes off the kickback and the whole train is advanced one car length on the arrival of each car from the kickback. The car feeder therefore is not operating except when it is necessary to feed the empty trip forward to make room for the oncoming empties. This makes for an appreciable saving in power cost.

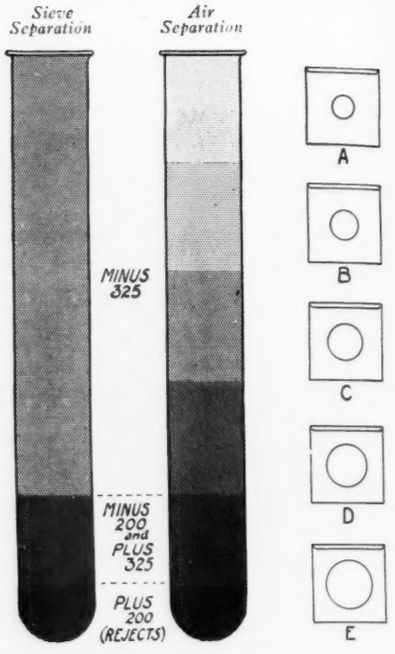
An Improved Air Separator

Portland-cement producers who are interested in acquiring greater knowledge of the flour (30 to 0 microns) in their finished product will be interested in Bulletin 25, which has been issued by Federal Pneumatic Systems, Inc., Chicago, Ill., and describes the laboratory air-separating unit shown in Fig. 1.

A sample of the "finished" is introduced through hopper *H* and, with mesh valve *M* closed, all entrained dust will be discharged into the "rejects" flask *D*. When the mesh valve *M* is opened by means of the dial *N*, fine dust is drawn out of the separator *A* and delivered to the collector *B*, the quantity and, obviously, the mesh varying with the size of the aperture. Further control remains in the blast gate *L*, which reduces the volume of air passing through the system. Excess air is vented from the air outlet *F*. (When employing a feeder on the commercial system the volume of excess air is negligible.) The separator, collector and connecting air ducts are built from copper sheets. The fan and motor are inclosed in a heavy aluminum housing. The motor will operate on any 110-v. lighting circuit. The separator and collector contain no screens and no moving parts, classification being effected by two opposing centrifugal currents of air. The assembly may be dismantled quickly and flushed.



A new and improved air separator



Showing separator principle

In the past reliable sieve tests have been limited to 325 mesh; beyond that line has been an uncharted area. Assuming that a nest of test screens indicates 10 per cent oversize, 15 per cent "minus 200" and "plus 325," and 75 per cent "minus 325," a comparison of sieve- and air-separation tests shows the results indicated in Fig. 2. For precision work the mesh-valve gate *M* is withdrawn from the air duct and various diaphragms substituted. Division is first made with diaphragm *A*, then with *B*, *C*, and *D*, diaphragm *E* making the separation between the "minus 200" and the "rejects." The fractionated parts of cement classified with this laboratory air system show marked variation in color, proving that the separator effects sharp mesh cleavage between the concentrates and oversize.

It has been demonstrated by this unit that a reading obtained with a 200-mesh screen reveals nothing of interest to the producer or purchasing engineer. One cement, which rated 85 per cent "minus 200" by a

screen test, was found, by means of air, to contain almost twice the amount of flour carried in another sample from a different mill which was shown, by screen test, to be 93 per cent "minus 200." It is manifest that the last-mentioned product could not show the high early strength toward which the cement industry is heading.

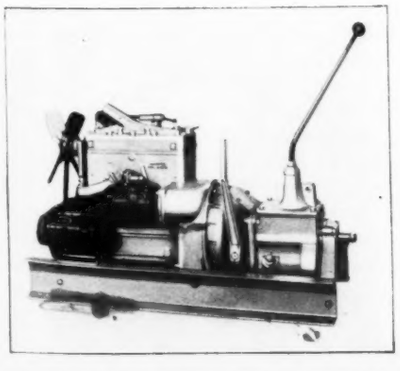
Plant superintendents can check the "plus 200" in the finished material from hour to hour with this unit. Results are registered instantly in the "rejects" flask, as the system is also to handle 2 lb. of aggregate per min. This assembly functions with equal precision on gypsum, lime and silica. Manufacturers can therefore anticipate the market when considering the installation of commercial systems.

These separators are built in 33 standard sizes for any capacity. The mesh of the "finished" is under instant control by means of a single mesh valve at grade. Precision separations are effected regardless of the ratio of the "rejects" or the rate of feed below the maximum which might be termed the saturation point. Other advantages claimed by the manufacturer are the elimination of an elevator for handling the finished material and of the usual dust nuisance.

Three Speeds Forward and One in Reverse

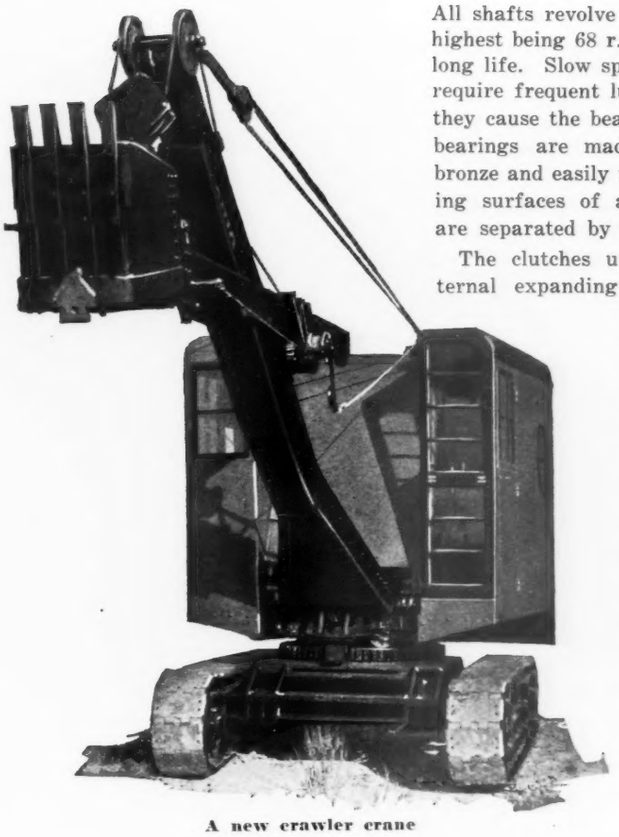
Fuller & Johnson has recently designed and begun the manufacture of its 4-cylinder Model BC 6- to 10-hp. industrial power unit with variable speed transmission three speeds forward and one reverse. The fully enclosed dry disc type clutch is mounted on the main shaft, operated at engine speed. The clutch can be equipped with hand lever or foot pedal.

This unit was designed for operating industrial trucks, small excavating machines, conveyors, small tractors and other jobs where varible speed is essential. The transmission is sturdily built and permits continuous operation in first and second gear without undue strain or wear on the working parts. It can be equipped with a smaller transmission for use when continuous operation in first or second gear is not required.



Engine with three-speed transmission

The 2-cylinder Model BB 3- to 5-hp. and the 4-cylinder Model AX 20- to 25-hp. can be furnished with valuable speed transmission and electric starters.



A new crawler crane

New Crawler Crane

The Ohio Locomotive Crane Company of Bucyrus, O., manufacturers of the well known Ohio railroad type of cranes, has placed on the market a ⅜-cu. yd. crawler type of crane and excavator incorporating therein some of the features in design and construction characteristic of the Ohio cranes and embodies the same precision of workmanship.

All of the castings that require strength are made of cast steel. The machinery base, side housings, roller path and rack and the large frame in car-body are each made of a large steel casting that will withstand all severe shocks and strain without breakage.

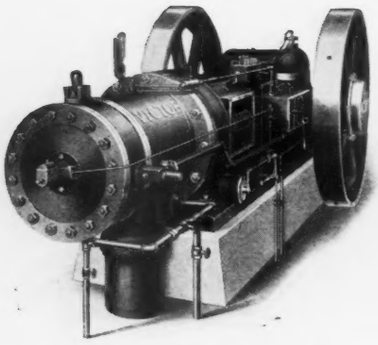
All shaftings are made larger in diameter than what is actually required, of high grade steel, accurately machined, ground to exact size, and provided with large size keyways to prevent shearing or rolling of keys. All shafts revolve at slow speed, the highest being 68 r.p.m., thus insuring long life. Slow speed shafts will not require frequent lubrication, nor will they cause the bearings to heat. All bearings are made of high grade bronze and easily renewed. The wearing surfaces of all thrust bearings are separated by bronze washers.

The clutches used are of the internal expanding type 18½ in. in diameter. The shoes are faced with composition linings which can be easily renewed without removing or disturbing other parts on the shaft. All of the clutches employed are of the one size and all such parts are interchangable.

An International gas power plant is used which is built especially for industrial purposes. This crane or shovel is capable of making seven complete revolutions per minute. For shovel operation, the boom is of the box girder design, provided with outside dipper handles and there being no opening in the boom at the dipper shaft. A boom hoist operated by power is provided for on all machines as standard equipment. The three operating levers and the hydraulic brakes are controlled from the operator's seat and arranged within easy reach to allow full operating efficiency with minimum effort.

A fully enclosed cab of heavy sheet steel is provided with adequate windows and doors. A method is employed whereby all fumes and hot air from the motor are drawn from inside the cab. The tracks are made of cast steel and adjustable from either end by manganese bronze screws sufficient to allow for the removal of one shoe in case of breakage. The tread side frames are made in one piece steel casting.

This machine is easily converted from a shovel to a crane and vice versa. When furnished as a crane it will be equipped with a 30-ft. parabolic steel boom to handle a ⅜-cu. yd. clam shell bucket. A longer boom can be used when required. When furnished as a shovel, it is equipped with a 16-ft. length of boom equipped with a ⅜-cu. yd. steel dipper provided with bucket teeth.



An improved oil engine

New Engine Announced

The Power Manufacturing Company, subsidiary of the Osgood Company, Marion, O., announces its line of new Victor oil engines. Six sizes are being manufactured—the smallest having a rating of 45 hp. and the largest 165 hp. The power stroke resembles the action of the old style Corliss steam engine.

New Rubber Chute Lining and Cement on Market

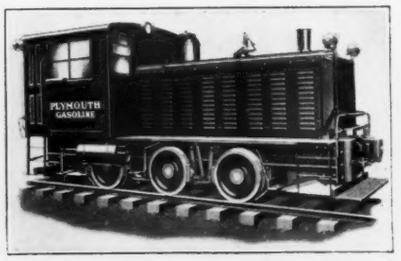
The Diamond Rubber Company has recently brought out its rubber chute lining which is an exceedingly tough rubber compound made with a thick fiber back for attaching to chutes, skirt boards, storage bins and truck bodies. For attaching this chute to metal surfaces, it has developed a new rubber cement which remains permanently sticky, does not dry out and becomes hard.

Laminated Conveyor Belt Has New Features

The Diamond Rubber Company has recently brought out its flat-plied, edge-tied constructed laminated conveyor belt. It is said to have better flexibility, straightness, edge-adhesion, internal strength and age-resistance. The new rubber compounds have been improved in their resistance to oxidation and deterioration from 200 to 500 per cent.

Announce Two New Model Gasoline Locomotives

The Fate-Root-Heath Company has announced its new Plymouth Model WLG 25-ton and 30-ton locomotives. The 25-ton locomotives are driven by LeRoi Model RXS, 6-cylinder 6½-in. bore, 7-in. stroke, valve-in-head, heavy duty type engines with counterbalanced crankshaft and full force feeding oil system. These engines are rated as 165 hp. at 1,000 r.p.m.



New model gasoline locomotive

and 180 hp. at 1,200 r.p.m. The 30-ton locomotive is operated by a LeRoi Model RS-JS 6-cylinder, vertical, 6¾-in. bore, 7-in. stroke, valve-in-head, heavy duty engine with counterbalanced crankshaft and full force feed oiling system. This engine develops 180 hp. at 1,000 r.p.m. and 195 hp. at 1,200 r.p.m.

This Shovel Has Three Diesel Engines

The introduction of a 1-yard Diesel shovel having three independent engines—one for each motion. This Diesel shovel-crane dragline has the same high-speed digging features as the well-known Gas-Air with the added advantage of the tremendous lugging power and great fuel economy of the Atlas-Bucyrus-Erie diesel engine.

This shovel derives power for the hoist directly from the Diesel engine and power for the thrust and swing from air engines, the compressed air for which is stored, while the power from the main engine is not required for hoisting.

Diesel Drive Used On Small Convertible Unit

This machine, the smallest of the Bucyrus-Erie family, was introduced during 1929 and first shown at the 1929 Road Show. The machine lives up to the Bucyrus-Erie reputation for simple, rugged, construction, easy convertibility and extreme accessibility. Like its companion machine, the 1030, ¾-cu. yd. machine, it has all shafts above deck, equipped with ball-bearings. Convertibility from one to the other of the following types is easily and quickly accomplished—

Type 1020 gasoline shovel with rope crowd

Diesel-air shovel type DA2

shovel, dragline, crane, clamshell and drag shovel. Its high speed cycle and ease of control make it a big producer and the sturdy motor which forms its power plant delivers ample power for all kinds of digging.

Economy in Fuel Features Small Excavator

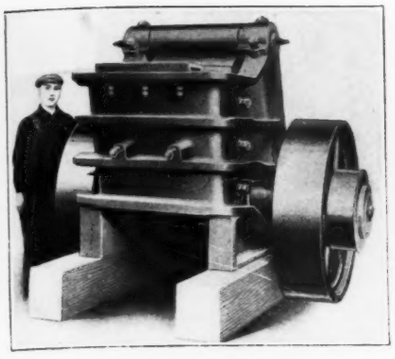
In 1928 the Bucyrus-Erie 1030, ¾-cu. yd. gasoline shovel was introduced. In 1929 the machine is also offered with diesel drive, thus combining the rugged simplicity, fast cycle and ease of operation with a fuel cost that is low compared with steam or gasoline.

The machine is remarkable in that it only uses from one-half to one-third the amount of fuel required by a gasoline machine and this fuel costs only one-third to one-fourth as much per gallon as gasoline. This means that the fuel cost of a 1030 runs from seventy-five to ninety per cent less than the fuel cost of a gasoline machine of the same size.

Another very important feature of the diesel driven excavator, introduced by Bucyrus-Erie in 1922, is the unusual "lugging power" of the engine. Even when slowed down by very heavy loads, the engine hangs on and pulls, instead of coughing and dying as a gasoline engine so often does.

Railway-Maintenance Shovel, Crane

To meet the demand of railroad maintenance work for a universal maintenance machine of ¾-cu. yd. capacity, Bucyrus-Erie has introduced a caterpillar type mounted machine especially designed for railroad work which can be equipped as either shovel, dragline, clamshell or crane (with hook or electric lifting magnet) and is designed to be transported on a railroad car (the width of the caterpillar being such that it can be run into an end dump gondola car for work train service).



New jaw crusher

New Jaw Crusher Simplifies Breaking Operations

An improved jaw crusher is a new size—Telsmith No. 15-A, equipped with 15-inch by 24-inch feed opening—has been brought out by the Smith Engineering Works of Milwaukee, Wisconsin.

This jaw crusher is remarkably substantial and unusually compact. Reflecting the modern trend in jaw crusher construction, both frame and swinging jaw are cast steel, rather than gray iron, as a protective measure against tramp iron. The crushing stroke is transmitted directly from the eccentric shaft to the swinging jaw, by means of a horizontal pitman. Lever devices and toggles are eliminated. This radical improvement in design shortens and strengthens the crusher structure . . . lowers flywheels below feed level . . . reduces the weight in reciprocation and the number of bearings are reduced to six and the parts swinging in the crushing cycle are cut to three. As a result, friction, vibration and power consumption are radically reduced.

Protection against tramp iron is afforded by a safety device that can be adjusted to exactly fit working conditions. This Telsmith friction safety device does away with toggles and shear pins. The flywheels, instead of being keyed, are clamped to the shaft by set-screws acting on brass discs. The flywheels are held in position by a thrust collar. The brass discs are not hard enough to score the shaft, so that any slight slippage is harmless. The makers claim this device to be very effective in preventing damage by tramp iron.

Rubber Cushioned Idler Used At Loading Points

Some time ago the Robins Conveying Belt Company of New York and Chicago brought out the rubber cushioned idler to be installed at loading points of conveyors. Its function is to absorb the shocks of falling chunks of rock that on all metal idlers often result in bracket breakage and damage to the belt.

Improvements have been added from time to time, the latest being the steel strips fastened to both sides of the conveyor, as shown in the picture. Primarily, they are to prevent spilled material from banking up against the rubber cushioned pulleys.

The rubber-cushioned idler

A secondary function is as a cleaner to take off any sticky material that may adhere to the pulleys. The strips are placed so that the edges are about ⅛ inch from the pulleys. Since the surface wear on the pulleys is negligible, this narrow gap is maintained almost indefinitely.

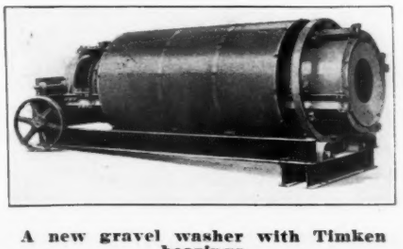
The steel strips are bolted to all brackets, the bolts extending through holes in the brackets.

The other improvement is in the design of the end brackets which are, as formerly, of malleable iron. As will be noted, the hooded shape protects the bearings from damage from large chunks of ore or rock that might fall on the brackets themselves. The design of the brackets also is such as to shed dirt away from the pulleys.

Gravel Washer Shown With Timken Bearings

The Telsmith-Hercules Gravel Washer is a new and improved type recently brought out by the Smith Engineering Works of Milwaukee, Wis., makers of the Telsmith line of all-steel ball mill scrubbers. It is claimed to be the only washing device in which anti-friction bearings are standard equipment.

The Telsmith-Hercules is equipped throughout with Timken tapered roller bearings, the use of which, it is asserted, cut the power consumption fully one-third. A big 60-in. by 24-ft. Hercules can be turned over with one hand. This type of bearing assures adequate lubrication with a minimum of attention and protects bearings against water, sand and dirt.



A new gravel washer with Timken bearings

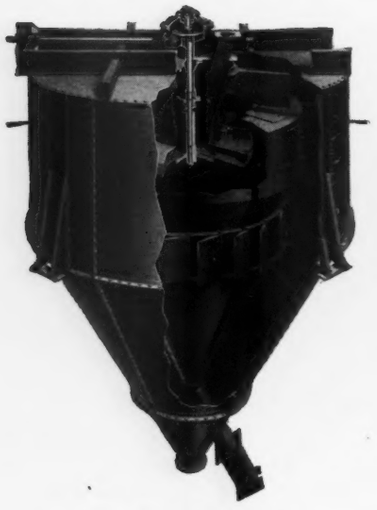
The new washer is all metal construction and has the characteristic Telsmith tandem sand and pea gravel jacket, as well as the ball-mill scrubber which employs the coarse rock as a grinding agency to reduce the clay balls to a paste which is soon washed out. In the new Hercules scrubber chains have been added. Fastened, in festoons, to the angles in both scrubbing sections, they are especially valuable in pits which lack sufficient rock for the complete action of the ball mill principle. In any case they are very effective in rubbing out the clay balls as they greatly augment the ball-mill action.

The rigidity of the screen barrel has been greatly increased by segmental hoops which bind the screen plates and longitudinal angles into a stronger and stiffer unit. Both hoops and perforated plates are drilled to template and bolted together. Screen sections, jacket or hoops are renewable without drilling or other machine work.

New Mechanical Separator

A new mechanical separator for classifying materials to an extreme fineness has just been announced by the Raymond Bros. impact pulverizer company. It is claimed that this separator represents an improvement over existing types of air separating equipment.

The operation of the separator is simple. The product is fed onto a distributing wheel or disc which throws the material over the edge and across the air space between the disc and the inner cone of the separator. At the same time the fan in the top of the separator creates a large volume of circulating air which travels down between the inner and outer



Mechanical separator

cones, entering the inner cone through the deflector doors. At this point it starts to go through the dropping material.

The construction permits of the use of a very large volume of air to assure the picking up of all particles. The selection of the proper size material is made by a patented arrangement which literally knocks out of the air current the over-size particles. This cuts down the amount of fine dust which ordinarily would be discharged to the tailings and makes the separation much more efficient. It also makes it possible to obtain uniform fineness from the separator regardless of the variations in the mill grind.

The Raymond Mechanical Separator may be installed in conjunction with almost all types of mills, such as hammer, tube, roller, ball, attrition, beater, etc. The operating mechanism is simple in construction and positive in action. All moving parts of the separator are accessible and large access doors are so placed as to make inspection easy.

This New Screen Bucks

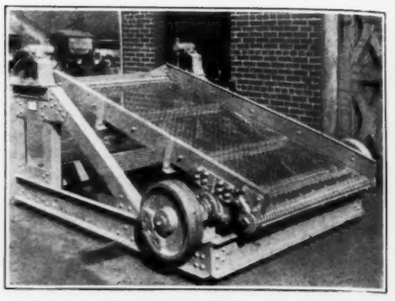
Among the developments brought out during the year by The Fairmount Mining Machinery Company, Fairmount, W. Va., is a vibrating screen that bears the name Broncho, characteristic of its toughness as well as action. This machine has proved thoroughly dependable for continuous service with a minimum of attention and upkeep. Two flywheels, one of which is the driving pulley, are mounted upon the ends of a heavy shaft and assure balanced, smooth running. There is no hammer action whatever and the operation is quiet. The screen's angle of inclination, the path of the screen's motion, and the tightness of the screen cloth are easily and quickly altered or adjusted.

Improved Type of Movable Tower Excavator

During 1929 Sauerman Bros., Inc., introduced a larger and improved type of movable tower excavator for large earth-moving projects such as stripping overburden, digging or cleaning reservoirs, or building levees and embankments. This machine is essentially the same as the Sauerman power drag scraper commonly used for the excavation of sand and gravel and similar work, with the exception that the scraper power unit and the guide blocks at the forward end of the span are carried on a self-supporting and self-propelled head tower, rather than being set in a fixed location. This tower is moved along as fast as the excavating progresses, and the excavated material is built up into a high pile at the edge of the property, or loaded by means of a ramp and movable hopper into trucks or railroad cars.

Movable tower excavators of this type can now be supplied in sizes up to 10-cu. yd., with spans varying from several hundred up to a thousand feet,

Movable tower type of Sauerman drag scraper



Broncho vibrating screen

and capacities (varying with the length of haul) up to 500 cu. yd. an hour. The machine in the accompanying illustration, which went into service during the year, is a 6-yd. outfit with a capacity of about 250 yd. an hour on an average haul of 200 ft. or 175 cu. yd. an hour at 300 ft. average.

The digging unit in these machines is the Sauerman Crescent power scraper bucket, and the method of operation is essentially the same as in any power drag scraper installation—the bottomless bucket digs its load by simply being pulled forward through the material to be excavated, and when filled rises to the surface and conveys the load smoothly across the top of the ground to the dumping point.

New 16-Cu. Yd. Stripping Shovel Is Largest

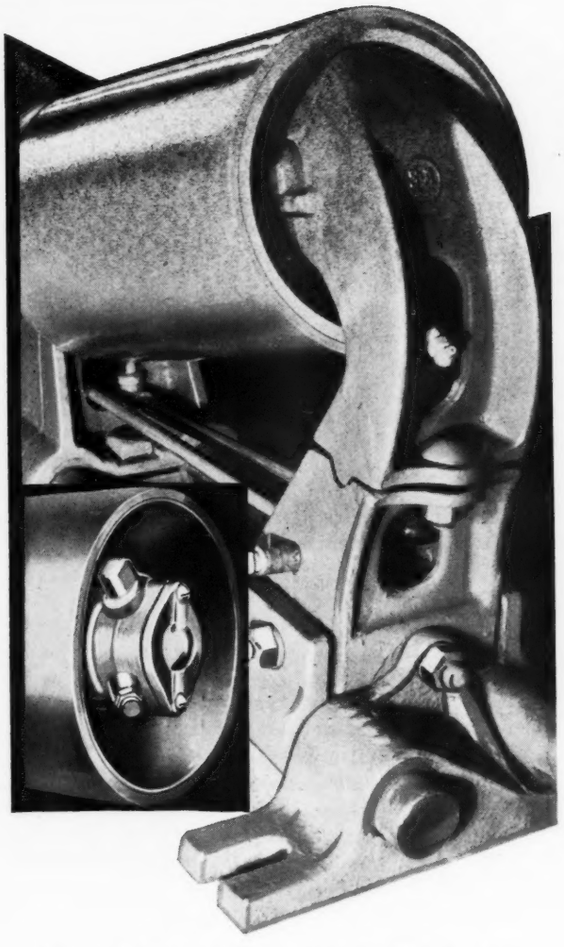
With a dipper capacity larger than any other dry land excavator the new 16-cu. yd. combination of the Bucyrus-Erie 750-B makes that machine the largest output capacity stripping shovel ever built. This machine has produced almost 500 cubic yards per month. The engineer's estimate of a heaped dipper full is 23 cubic-yards.

Stephens-Adamson Improves "444" Belt Carriers

The "444" belt conveyor carrier, recently improved by Stephens-Adamson Mfg. Co. of Aurora, Ill., was one of the first successful anti-friction carriers for heavy duty belt conveyors.

The original carrier was designed for the famous 4½ mile long conveyor and featured the tip back style of mounting on two large diameter steel shafts, which permitted any carrier to be tipped back onto the conveyor deck where it could be inspected or replaced without stopping the conveyor belt.

The improvements include double Timken roller bearings for each self-aligning bearing, belt rollers with self-cleaning end castings which prevent



Improved belt conveyor features roller bearings and self-cleaning pulley ends

collection of dirt and moisture, and a new hood type end bracket to support and protect the outer bearings. The bearing housings have been improved with an interlocking grease seal which makes it virtually impossible for dirt or moisture to enter the bearing.

The "444" carrier now features:

1. Three roller design of great strength, requiring the least possible power to start and to run.
2. Closely spaced rollers, made of heavy seven inch diameter steel tubing with self-cleaning end castings.
3. Line shaft turns with each roller, decreasing bearing wear to minimum.
4. Two bearings for *each* roller; self-aligning bearing housings are equipped for pressure lubrication.
5. Double Timken bearings in *each housing*. Double or single ball bearings are also furnished where desired.
6. Hood type end brackets protect the outer bearings.
7. Rollers are supported upon two large diameter cross shafts which make it possible to tip any carrier back onto the deck without stopping conveyor.
8. Entire carrier tilted at the proper angle to train conveyor belt.

Ball-Bearing Gearless Gyratory Crusher Developed

One of the developments in the crusher field of particular interest to operators is the Kennedy ball bearing gearless gyratory crusher. The basic idea was conceived and the first machine built a number of years ago. By watching its operation on many different kinds of rock and carefully analyzing results, improvements were made until gradually the present state of perfection was reached.

The crusher is made in two general types, viz., standard crusher for coarse crushing or primary work, and secondary crusher for fine crushing or the production of smaller sizes. The secondary crusher is built under two different designs. Where there is no liability of tramp iron or steel entering the crusher, the design is similar to the standard crusher, but when protection is required against damage from such material, it is built with spring release or what is known as Type "S." In the Type "S" crusher, only about 31 per cent of the crushing load is carried by the springs and these do not function except when some non-crushable material enters the crusher.

According to the manufacturer, the principal points of interest in both types of crushers are the following:

Main shaft suspended at fulcrum point where there is no lateral movement.

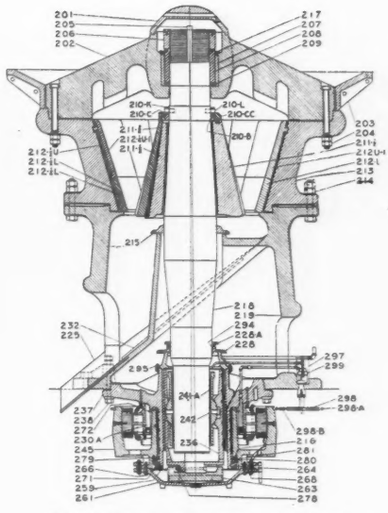
Head and mantle are held in place without weakening main shaft by cutting threads in it.

In secondary crusher the concaves are reversible or the top shell with concaves in place may be reversed. This doubles the life of the concaves.

The weight of all driving parts is carried on ball bearings, reducing loss of power by friction to a minimum.

Power is applied to eccentric in such a manner as to evenly distribute all strains and eliminate the overturning moment on eccentric found in geared crushers. This feature alone greatly reduces wear on the bearings and eliminates the necessity for rebabbitting until after crusher has been in operation for a long period of time.

In both types of crushers there is built into the driving pulley a specially designed duplex synchronous motor, with 100 per cent starting torque. The synchronous motor uses the least amount of power to do a given job. It corrects power factor so that power can be purchased at a lower rate. It operates crusher at a constant speed insuring greatest quantity of uniform crushed product.



Ballbearing gearless, standard gyratory crusher

The capacity of a gearless crusher is of necessity greater than that of a geared crusher for the obvious reason that it may be operated safely at higher speed. It is a well known fact that the capacity of any crusher of this type increases in proportion to the square of the increase in number of gyrations per minute. If we double the speed the capacity is increased four times and other ratios in proportion. It is this ability of the gearless crusher to operate at high speeds that results in greater production and more uniform product.

Improved 3-Compartment Mill

On behalf of the cement manufacturers the Traylor Engineering and Manufacturing Company has made intensive study and exhaustive experiments in finish grinding to help meet the growing demand for high early strength cement and the new improved Traylor three-compartment mill is a wonder machine—an ultra-modern development of the multiple compartment mill which the Traylor Company pioneered six years ago.

The compartments are 12 ft., 14 ft. and 24 ft. respectively with Traylor patented partition and discharge diaphragms. The feed end is carried on a locomotive tire riding ring, shrunk into place on a cast-steel support, riveted to the shell, resting on two hard cast-steel rollers of large size.

A 3-compartment mill

The rollers have Timken bearings. The discharge end of the mill has an accurately turned trunnion, and with extra heavy Timken bearings carries this end of the mill. These bearings are mounted in an extra heavy pedestal, secured in place by adapters, protected from grit and loss of lubricant by special sealing rings with labyrinth grooves and felt packing. The pedestal is of the ball-and-socket type, mounted on a heavy sole plate, which is wedge adjusted.

A pump, cooler and filter are provided for supplying lubricant to the bearing—about 2 gal. of oil being required. The drive is of the single-reduction type, a high carbon steel girth gear with involute cut teeth meshing with a tool-steel pinion, both completely housed for dust-proofness, the lower part of the housing protecting the pinion, forming an oil reservoir, in which the pinion runs. The main countershaft has two Timken bearings, and two additional Timken bearings are provided for the shaft extension to the motor. The shaft extension is fitted with one flexible coupling and one solid coupling. The mill is fitted with an outside screen for returning oversize passing the partition diaphragm back to the coarse compartment, discharging the fines at the same time to the intermediate compartment through four ports in the diaphragm frame. The discharge trunnion is fitted with a conical screen, in a dust-proof housing, with separate discharges for finished product and broken balls, which may escape from the mill.

Heavy Duty Lined Dredging Pumps Suitable for 150-Foot Total Head

The new type of Morris Machine Works heavy duty lined dredging pumps have been specially designed for handling heavy gravel and sand and for operation against high heads. These pumps represent the result of over half a century of experience in specializing on dredging pump service, and embody advanced engineering practice in pump design. Many special features have been developed in the design of these pumps to provide maintenance of high initial efficiency, long life and economical replacement of parts subject to wear.

The shell, shell lining, impeller, shaft, bearings, and all other parts are of exceptionally heavy and rugged construction and may be readily renewed with little labor and without disturbing the adjustment of the pump and bearings.

The wearing parts; that is, the shell liner, impeller and suction disc liner may be supplied either of semi-steel, carbon steel, or manganese steel, depending on the service. For pumping light, non-abrasive material, semi-steel provides satisfactory service; while for handling gravel, manganese steel parts should be used. These pumps are built for belt or chain drive or for direct motor drive.

The renewable shell liner is in the form of a volute and its thickness at various sections is proportioned to the rate of wear at these points. It is a simple casting, requiring a minimum amount of finish, and practically all of the material in the liner is utilized to resist wear. The liner is held in place entirely by the outer casing, and the casing is horizontally split so that by unbolting and removing the top half, the liner is accessible for inspection, or renewal and replacement.

In dredging pumps of ordinary design the natural wear at the suction inlet rapidly reduces efficiency owing to the resulting internal leakage between the impeller and the suction disc. In this pump the wear can be taken up by the sealing ring which may be kept at proper clearance from the face of the impeller by means of pushing and pulling screws projecting through the suction disc and adjusted from the outside of the casing. These adjusting screws permit maintaining a thoroughly effective seal so that the pump can be kept up to its initial efficiency and capacity until the internal parts are completely worn out. In addition, the maintenance of proper clearance between the disc and impeller prevents the material from churning at this point and reduces the wear on these parts to a minimum.

An impeller may be correctly balanced at the start, but wear tends to destroy the balance and unless the shaft is supported firmly in the hub the whole pump will vibrate. The resultant heavy stress on the shaft and bearing would make constant packing tightness almost impossible. Trouble from this source is prevented by beans of a cutless rubber bearing close to the impeller so as to eliminate over-hang and give the shaft maximum support, thereby eliminating vibration and packing failure.

The heavy duty ball bearing which supports the shaft outside of the hub is of ample size to carry both the thrust and radial loads and is contained in a dirt and dust proof bearing. This bearing not only minimizes friction and saves power, but eliminates bearing troubles and reduces lubricating costs. The bearing is mounted in a spherical assembly on a sleeve with a tapered fit on the inside. The pump shaft fits into the sleeve and is held in place by a locking nut. The bearing assembly is carried in a spherical seat in its outer housing, which can be moved back and forth on the sub-base by means of a threaded rod so as to permit locating the impeller centrally within the pump casing.

A special form of impeller inlet permits the material to enter the impeller without shock or disturbance, serving as a material factor in helping to increase the efficiency of the pump as a whole. The easy entrance curves also assist in reducing the wear on the impeller by producing a smooth, even flow of material without eddies or turbulence.

The hydraulic balance obtained in this pump design reduces the thrust load to such a small amount that relief holes are unnecessary, thus preventing the introduction of particles of sand and grit into the hub disc where they would cause wear and impair the packing.

The use of a large suction opening reduces the velocity of the material entering the pump, thereby reducing the friction in the suction pipe and the wear on the suction passages, and permitting dredging from greater depths.

The advantage of this feature has been thoroughly demonstrated in practice, and most of the large dredges recently built are made with a larger suction than discharge. In special cases such as where heavy gravel is to be delivered to the pump through a long stretch of horizontal pipe on the suction side, it is sometimes preferable to use a suction inlet of the same size as the discharge, but these conditions, as well as all other requirements to be met, are carefully studied by the Morris Engineers before recommendations are made.

Model 871 Heavy Sinker

The Gardner-Denver line of drills has recently been augmented by the addition of a heavy sinker for deep hole work. This machine weighs 70 lb., and is capable of handling heavy sections of steel up to the lengths ordinarily used in open quarries. The rotation is effected by means of a ratchet ring and rifle bar and the machine is equipped with an efficient blowing device which cleans holes to any depth within the range of the machine. It is an exceptionally easy riding machine and will find a wide use among quarry operators.

Car Dumper for Quarries Using Rear-Dump Cars

Limestone quarries using large crushers and rear-dump cars have found the Seaverns-Black car dumper to be particularly well adapted for their use to speed-up production in an economical manner. In operation, the quarry car enters the Seaverns-Black car and is carried to the crusher hopper. As the car door trips, the stone is dumped directly into the hopper. Another important feature is that the car is very safe to operate. The entire operation is carried on without delay as everything works automatically. The car dumper is manufactured by the James B. Seaverns Co., of Batavia, Ill.

Huge Bulldog Crusher Is Under Construction

In the crushing field, a notable achievement, when completed, will be a 56 in. by 72 in. bulldog jaw crusher which is now being built for a large steel company—the machine being the next largest jaw type breaker the Traylor Engineering and Manufacturing Co. has so far built.

This crusher has a sectional frame, is built of cast steel and forged steel throughout, and in it is incorporated the patented safety device which precludes all possibility of breakage of any part of the crusher, due to operating causes.

This device, which has won the unqualified approval of operators because it constitutes a real insurance against loss, is simple in design and easy to adjust. It consists primarily of a punch actuated by the eccentric or pitman shaft of the crusher, and a punching bar, through which the punch is driven when excessive strains are developed. The punch is held in position by a plunger working in the body of the saddle of the pitman, and in contact with a roller attached to the back end of the front toggle.

A die of hardened steel is placed below the punching bar, which is of ordinary bar steel, and which is sufficiently strong to take all of the crushing strains in normal operation.

Extraordinary pressure from a packed crusher, or a piece of tramp iron, will drive the punch through the punching bar. The slug that is punched out falls out of the pitman rocker and the toggles drop. Stops prevent the toggles from droping below a limited distance. Crushing stops immediately because the clearance between the plunger and the plunger roller is greater than the total vertical stroke of the pitman. This safety feature can be applied to any bulldog jaw crusher or adapted to any other make of jaw breaker.

Automatic Brakes Safeguard High Speed Hoist

To minimize the number of accidents resulting from the dropping of loads, especially in congested districts, the Lidgerwood Manufacturing Company, Elizabeth, N. J., has announced a new type of high-speed steel erectors' hoist, equipped with emergency brakes which are automatically set in case of either power failure or neglect of the leverman to keep his feet on the service brake levers. This hoist is built in the 100 hp. size, duty 9,000 lb. at 300 ft. per minute, for operation with 3-phase, 60 cycle a. c. at 220 volts. A model is available for 440 volt operation on special order.

As in the older hoists, the new type is equipped with band service brakes controlled by foot levers. These are used to govern the rope speed while lowering or to hold the drums while the frictions are disengaged. In addition, however, emergency "V" type post brakes are fitted to each drum over the frictions. These are spring set and released by means of motor-operated hydraulic rams. When power is cut off of the hydraulic operator motor, the piston descends, but it is necessary for the oil under the piston to pass out into the upper chamber of the cylinder. If a load is running away and the emergency brake goes on, the more gradual application of the brake as obtained with the hydraulic operator is highly desirable as there is less chance of causing the hoist cable to break.

These emergency brakes will set automatically in the event of failure of power supply, either at its source or by blowing of a fuse, or should the leverman fail to keep his feet on the service brake levers, each of which is connected to a switch controlling the emergency brake for the drum concerned. Thus, the automatic emergency brake feature makes it possible for the operator to drop the friction and brake levers and abandon the hoist while it is in service without any possibility of either boom or load falling.

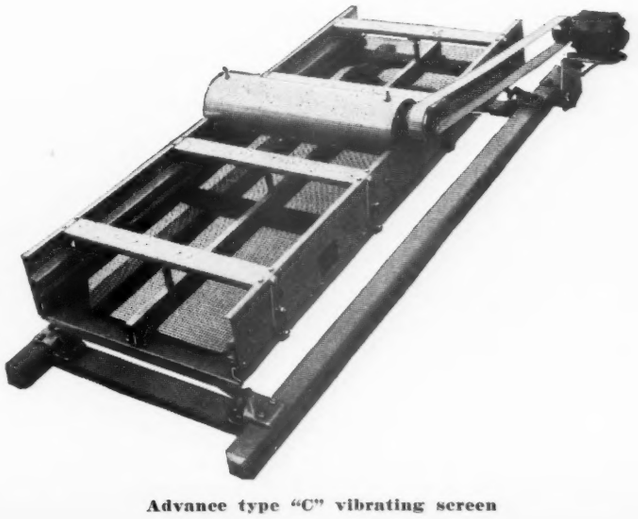
Furthermore, the emergency brakes may be set at will by means of a hand switch for each drum mounted on a convenient panel, which is also provided with pilot light to indicate whether current is off or on, and whether the brake is set or not.

Although the drums are provided with steel ratchets and pawls, the emergency brakes are used in place of these for regular service. The hoist is also provided with an automechanical non-reversing brake which may be manually released by the operator if he desires to reverse the motor and hoist.

Other features of the machine are conventional. The drive between motor and hoist is a silent chain belt totally enclosed in an oil-tight casing. All gearing is of cut steel protected by guards. Wiring is enclosed in armored metal conduit, and resistors are of the non-breakable edge-wound type. The hoists are shipped from the factory as complete units ready for service except for attaching the current supply wires and fuses and placing rope on the drums.

New Type of Vibrating Screen

The Universal Vibrating Screen Company of Racine, Wis., announces the advanced type "C" screen, and improved vibrator for separations at from 1½-in. clear openings down to 100 mesh. It is claimed that the intensity of the vibratory screening action in this new model is such that the most difficult materials are handled efficiently and most economically. There are two standard sizes of these



Advance type "C" vibrating screen

screens, the 3 ft. by 8 ft. and the 3 ft. by 6 ft.

It has added to its line a new heavy duty type "M" scalping screen, which is also manufactured in two standard sizes, the 3½ ft. by 8 ft. and the 3½ ft. by 6 ft. These units are recommended for separations at from 2½ in. clear openings down to ⅛ in. on feeds of material of any size up to 8 in.

A new catalog 90, describing the late model Universal vibrating screens in various sizes and types, is just off the press. This 32-page catalog is fully illustrated and describes these screens and contains much information with regard to various screening problems, of interest to producers.

Canada Cement Installs Largest Rotary Kiln

The largest rotary kiln on the Western Hemisphere, a unit 11 ft. 3 in. to 10 ft. diameter, 365 ft. long, installed at Plant No. 3 of Canada Cement Co., Ltd., Hull, P. Q., Canada, was placed in service in 1929. It will be remembered by readers that this breaks Traylor's previous record of two kilns of the same diameter, 343 ft. 9 in. long, at the plant of the Alpha Portland Cement Company, Phoenixville, Ala.

This kiln is carried by six single roller supports, one of which is fitted with double thrust rolls. In these supports, Timken roller bearings are mounted directly on the stubs of the roller hubs. The outer race of Timken bearings is held in place by an adapter carefully machined for, and bolted to, the pedestal bearing, fitted with an inside cover and packed to render the bearing dust-proof and oil-tight. Alemite lubrication is standard, but the pedestal is designed with an oil chamber so that the Timken bearing may be operated in oil, if desired. In the case of the thrust bearing the rollers are made conical to operate without slippage. The shaft is made integral with the roller and is provided with a thrust button on the bottom. The roller brackets are bronze bushed, clamped together and bolted to the sole plate mounted on the roller frame.

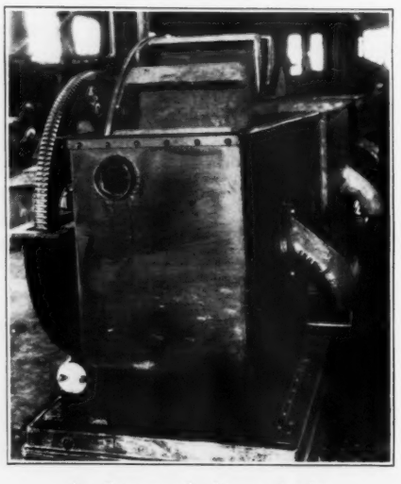
The kiln is driven through a special Traylor design geared speed reducer. The housing or case of this reducer contains a main driving pinion and three sets of reduction gears, all with cut teeth with the addenda of the pinion teeth increased slightly to lengthen the contact arc. All the shafts are fitted with Timken roller bearings, inserted through openings in the sides of the housing, with a fabricated guard provided for the main gear of the unit, as closely fitting the shell as will permit operation. The gears and the main pinion run in oil. The advantages of this reduction unit are that the original alignment is greatly facilitated and is permanently maintained, so that the whole may be slid away from engagement, to make the girth gear accessible, and returned to position with no adjustment, except horizontally.

This reducer has now been in use for several years and has effected great economies to users through proving claims made for it.

New Self-Contained Slurry Feeder Introduced

Another appliance introduced by Traylor Engineering and Manufacturing Company during the year is a special design slurry feeder which is entirely self-contained and fully enclosed consisting of a disc to the side of which are bolted a number of cast iron buckets, said buckets being adjustable to regulate the discharge into the funnel which conducts the slurry into the kiln.

The bucket wheel described operates in a steel tank fitted with suitable inlet, overflow and drain pipes,

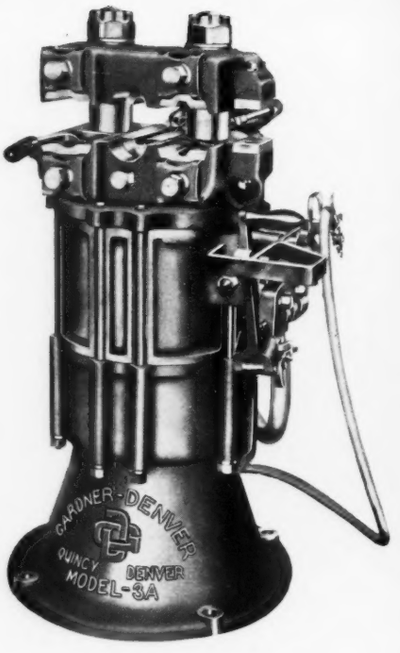


An improved slurry feeder

and the tank is enclosed in a steel housing fitted with a hinged inspection door. The wheel is driven by worm gears, from a high speed electric motor through a flexible coupling or it may be operated by chain drive from the shaft of a roller support of the kiln. The entire feeder is mounted on a heavy base plate which has an extension to carry the driving motor.

Model DS-3A Sharpener

This small sharpener was designed to meet the needs of mines, quarries



New dull sharpener

and public utilities which do not use drill steel with bits over 2½ in.

It is fast and powerful and has a low air consumption due to the special tandem clamping cylinder construction. The upper cylinder being used only for forging operations and the lower cylinder in conjunction with the upper for clamping, thus it is possible to operate this machine with a minimum consumption of air.

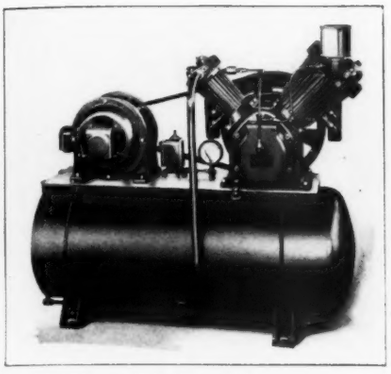
It will make and sharpen bits up to a maximum of 2½ in. and will form lug shanks on 1-in. 1⅛-in. and 1¼-in. round steel. It will make collared shanks of 3¼ in. and 4¼ in. on ⅞-in. and 1-in. hexagon or quarter octagon steel.

Model DF-1 Forge

Gardner-Denver's contribution to the mine and quarry blacksmith shop is the new Model DF-1 noiseless drill forge. When the furnace is running at a forging temperature of 2,200 deg. F., conversation in an ordinary tone of voice can be carried on directly in front of it. All temperature adjustments are taken care of by two valves, one at the right of the preheater and the other on the oil line at the burner. The lining of the furnace is composed of standard dimension fire brick with the exception of the top bricks forming the throat, which may also be cut from standard brick if the user so desires. This is an important consideration where delays are to be avoided, due to burned linings.

Ingersoll-Rand Develops New Air Compressor

Ingersoll-Rand Company announces a new line of air-cooled, two-stage air compressors, known as the Type 30. V-type belt drive is employed. Both motor and compressor have ball bearing.



Automatic start and stop compressor

The units are self-contained, the motor and compressor being mounted on a steel base, which is attached to the top of the air receiver. The latter, which is made of heavy pressed steel, is built to withstand a working pressure of 200 pounds. With this arrangement, no special foundation is required for correct alignment of the compressor and motor. The compressor is ready to operate as soon as the electrical connections to the motor have been made and the crankcase filled with oil.

The intercooler is located behind the fan-type flywheel, and a constant current of circulating air is driven directly across the cooling coils. This reduces the temperature of the discharge air.

Automatic start and stop control, furnished as standard equipment, operates independently, but in conjunction with the unloader. When the pressure in the air receiver reaches a point at which the regulator is set to unload, the motor is automatically shut off. A centrifugal governor allows the air in the high-pressure cylinder and intercooler to exhaust through the crankcase. This prevents the compressor from starting against a load.

Honed cylinders and two oil control rings reduce the oil in discharge air to a minimum. Each piston is run into its respective cylinder, insuring a perfect oil seal.

The base of the compressor unit forms a reservoir for the oil, and no oil pump is required. A bayonet gauge gives positive indication of the amount of oil in the reservoir.

A self-cleaning air cleaner keeps dirt out of the compressor and requires no attention. The compressor is entirely enclosed, and no dirt can get into it to wear out the working parts. A balanced crankshaft eliminates destructive vibration.

This improved two-stage design reduces power from 10 to 30 per cent.

New McLanahan and Stone Vibrating Screen

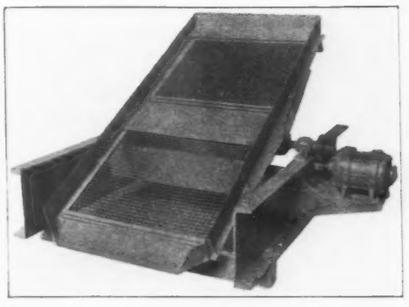
The McLanahan and Stone Machine Company has developed a new shaking screen which was designed to duplicate as nearly as possible the motion used in shaking a sieve by hand. Back-and-forth and up-and-down motion is produced by eccentrics cut opposite each other on the special steel shaft, which runs in dust-proof S. K. F. self-aligning ball bearings, welded to the frame and screen. The screen operates at a slow speed.

The entire assembly is self-contained and compact. The construction is sturdy and substantial being electric welded throughout. The two frames holding screens can be easily and quickly removed. Any wire or sheets can be used and two sizes may be obtained by using different sized openings on each frame. The angle of the frame can be quickly adjusted to obtain different sized products over the same screens. It is built in single or double deck in various sizes for different materials and capacities and can be driven either by direct gear from motor on screen or by pulley from line shaft.

Stephens-Adamson Perfects New Vibrating Screen

The Stephens-Adamson Manufacturing Company, after several years of designing and testing under actual working conditions, has put on the market a new vibrating screen. power - actuated This is made in various sizes ranging from 2 ft. to 5 ft. wide and from 4 ft. to 8 ft. long, all available in single, double and triple deck assemblies.

Some of the important features of this screen are the suspended sub - frame, the self-aligning ball and roller bearings with individual pressure lubrication and bronze grease seals, the detachable deck construction with quick-action clamps and standard screen panels, the grid type screen support and the adjustable balancing device. The angle of incline is easily adjustable and the screen is driven through multiple V-belt drive by an enclosed fan-cooled motor.

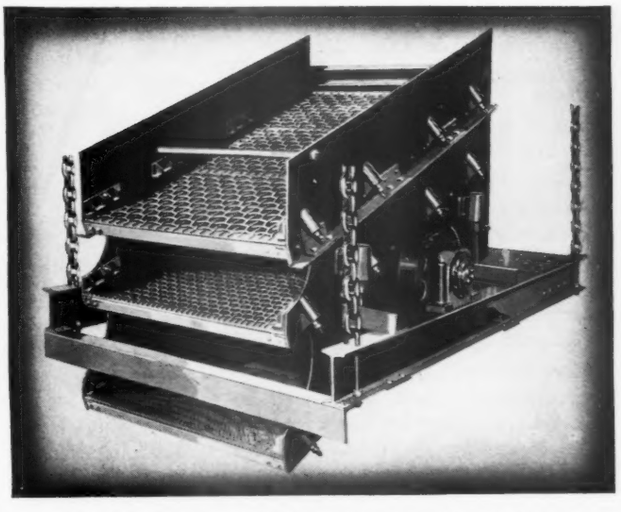


Shaking screen of new design

A New Streamline Drifter

The latest addition to the drill service of the Cleveland Rock Drill Company is the D9 which is designed for the hardest service to which a one-man drill may be subjected. Both this machine and the D8 have been successfully operated on work formerly done by much heavier two-man drifter drills.

The Cleveland Dock Drill Company offers a complete line of one-man drifters. D7 is the lightest of three machines; D8, the medium weight drill, has been on the market nearly two years and is said to be known as "the one-man drifter with the punch of a two-man machine;" and the latest designed D9 has a ½-in. longer stroke than the D8 is intended for the most difficult drilling conditions.



New vibrator screen designed by Stephens-Adamson for heavy duty separation

RECENT PATENTS

PIT AND QUARRY will furnish, at its actual cost, a copy of any patent cited below. A charge of ten cents per copy is made by the U. S. Patent Office, Washington, D. C., and readers may procure a copy directly by addressing the Commissioner of Patents, with payment for copies requested. Postage stamps are not accepted by the Patent office. We will endeavor to obtain copies of foreign patents for our readers but we cannot give assurance in every case for the reason that copies of such patents are not printed for distribution as liberally as are the American copies, nor is there a fixed charge per copy.

American Patents

Mining-machine. Dudley T. Fisher, Columbus, Ohio, assignor to Jeffrey Mfg. Co., same place. 1,736,853.

Method of washing gravel. Francis R. Dravo, Edgeworth, Pa., assignor to Dravo Contracting Co., Pittsburgh, Pa. 1,737,004.

Mining-machine. Charles E. Davis, Chicago, Ill., assignor to Goodman Mfg. Co., same place. 1,737,045.

Sand-conditioning machine for foundry art. Louis A. Camerota, Burlington, N. J. 1,737,144.

Elevator-bucket. David Geddes, Berkeley, Cal. 1,737,231.

Operating structure for clam-shell buckets. Robert G. Le Tourneau, Upland, Cal. 1,737,252.

Mixing-well for unloading sandboats and the like. Jacob R. Sensibar, Chicago, Ill. 1,737,341.

Unloading-boom for ships and turntable therefor. Jacob R. Sensibar, Chicago, Ill. 1,737,342.

Unloading mechanism for ships. Jacob R. Sensibar, Chicago, Ill. 1,737,343.

Screening apparatus. Franklin P. Nickerson, Cleveland, Ohio, assignor to W. S. Tyler Co., same place. 1,737,383.

Hammer mill. John G. Wilson, Paoli, Pa. 1,737,444.

Concrete-mixer. Carlyle H. Scott, New York, N. Y. 1,737,522.

Apparatus for pulverizing material. William J. A. London, Hartford, Conn., assignor to Peabody Engineering Corporation, New York, N. Y. 1,737,800.

Centrifugal pulverizer. Otto A. Kreutzberg, Lake Bluff, Ill. 1,737,854.

Composition of and method of producing concrete. Harry F. Adams, Greenport, N. Y. 1,737,906.

Bucket-operating mechanism for concrete-distributors. Joseph C. Lukachovic, assignor to Ransome Concrete Machinery Co., Dunellen, N. J. 1,738,012.

Meter for concrete-mixing machines. Joseph Eggert, Columbus, Ohio, assignor to Jaeger Machine Co., same place. 1,738,045.

Crushing-machine. Lloyd P. Walker, Belmont, Mass. 1,738,161.

Foreign Patents

Calcining limestone and cement. Louisville Cement Co. British, 306,856.

Molding cementitious materials. J. C. Seailles and Societe' Lap. British 307,638.

Charging device for stone and fuel into shaft kilns. A Eberhard. German DRGM 1,091,184.

Automatic discharge for shaft kilns. A. Eberhart. German DRGM 1,091,186.

High silica cement burned under the sintering temperature. J. Hempel. German H. 113,674.

Process for eliminating the injurious effect of sulphur compounds in fused cements. W. Kyber. German K. 108,532.

Porous concrete. H. Hulsmann. German H. 128,146.

Asbestos plates for wall and roof coverings. J. Paschka. German P. 45,330.

Rotary kiln with one or more drums rotating on the same axis effecting a cooling procedure. Amme-Luther-Werke. German DRP 479,326.

Cooling shaft for rotary kilns for the burning of cement. Klockner Werke. German D. R. P. 480,525.

Charging device for concrete mixing machines. Funke & Esch. German F. 64,810.

Rotary kiln which is more than half filled with the goods to be burned. A. Nilsson. German N. 30,094.

New Corporations

Dicalite Co., L. J. Walters, Chief Engr., Box 784, Torrance, Calif. 10,000 shares. To produce gypsum, lime, and cement.

National Gypsum Products Co., Ltd., care of Burbidge & Evans, Hamilton, Ont., Can. $50,000.

Sierra Gypsum Products Co., Ltd., Vernon Ave. and Soto St., Los Angeles, Calif. $250,000; 5,000 shares com. J. A. Jevne, Pres.-Treas.; H. M. Eichelberger, V. P.; Wm. Lacy, 2nd V. P.; W. E. Barnes, Sec.; W. H. Price, Gen. Mgr. To manufacture gypsum products and fireproof systems for building construction.

Canada Paving & Supply Corp., Ltd., Louis A. Merlo, Pres., Windsor, Ont., Can., formed to take over following companies in Walkerville, Ford, Sandwich, Riverside, Tecumseh, La Salle, Ojibway, Pt. Edward, and Leamington, Ont.; Merlo, Merlo & Ray; Essex Transit Co.; River Sand Brick Co.; Chick Contracting Co.; Chick Fuel & Supply Co.; Wm. Woollatt & Sons; Ryan Constr. Co.; Cross Bldrs. Supply Co.; Premier Constr. Co.; Border Bldrs. Supplies; Cast Stone Block & Machine Co.; and Windsor Sand & Gravel Co.

Olean Gravel Corp., Olean, N. Y. 1,000 shares com.

Standard Cement Products Co., H. U. Landis, Pres., Palmyra, Pa. $25,000. Henry Bordlemay, V. P.; M. N. Rishe, Sec.; Perry Bicksler, Treas. To produce crushed stone and manufacture cement blocks at Palmdale, Palmyra P. O., Pa.

Skagit Talc., Inc., J. B. McLean, Seattle, Wash. $99,000. W. P. Stockdale, W. F. Pooler.

Southern Indiana Lime & Mineral Corp., Wm. Buchanan, Corydon, Ind. 10,000 shares n.p.v. To quarry limestone. Joseph H. Kraft, D. M. Hastings.

Steven Perelli & Son Co., Inc., Steven and Vincent Perelli, Klockner Ave., Hutchinson Mills, Mercerville P. O., N. J. $100,000. To produce limestone.

Cadiz Limestone Products Co., Oliver Monaco, Adena, O. 500 shares n.p.v. Raphael G. Monaco, Michael Erdos, E. S. McNamee.

Boulder Canyon Gypsum Corp., Carl Lovegren, 792 Lovejoy St., Portland, Ore. $500,000. Grover C. Montgomery, 600 E. 34th St. N., Portland, Ore.; T. A. Garbade, 815 Ridgewood Ave., Portland, Ore.; E. Ross Housholder, Agent, Kingman, Ariz. To operate at Kingman, Ariz.

International Phosphate Corp., G. G. Crawford, 601 Duval St., Tallahassee, Fla. $250,000. C. L. Waller, C. D. Robinson.

Ready-Mix Concrete, Ltd., care of Messrs. Robertson & Janin, Ltd., owners, 1400 Sherbrooke St. W., Montreal, Que., Can. $200,000.

Hawley Quarry & Construction Co., J. R. Dickson, Shallowford Road, Chattanooga, Tenn. $1,000. To produce limestone.

New Jersey Rock Products, Inc., Morristown, N. J. $125,000.

Temple Slag Co., Gilbert M. Sawyer, Treas., Temple, Pa. $5,000 John S. Hipple.

Mardy Sand & Gravel Co., care of Schuler & Putnam, Robt. B. Putnam, Koch Bldg., Millersburg, O. $15,000 and 250 shares n.p.v.

American Stone Corp., K. E. Longley, 150 Rutledge Ave. East, Orange, N. J. 5,000 shares com.

Canada Diatomite, Ltd., Wm. A. Laming, Man. Dir., 207 Campbell Bldg., Victoria, B. C., Can. Will build plant for quarrying, grinding, pulverizing, and calcining china clay, clam shell, and diatomite.